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COMPUTERWORLD

Retail pinch sparing IS investments

Stores take long-range view on technology cost

BY MICHAEL FITZGERALD
CW STAFF

Retailers are turning to information technology to battle the first nationwide recession to hit the U.S. in seven years.

An Index Group, Inc. survey of 20 top retail and wholesale information systems executives concluded that overall spending on IS will rise 6.1% in 1991, compared with a 5.3% average increase in all industries.

Despite that spending pattern, however, many retail IS directors are sounding decidedly thrifty these days.

"We will spend less in 1991 than we did in 1990, and that's saying something," said Dave Evans, vice president of IS at J. C. Penney Co. in Dallas. Evans said the recession has slowed spending and is prompting J. C. Penney to "expedite" cost-saving projects such as the previously planned closing of two of its six data centers. He also said IS is not hiring these days. "It's definitely not business as usual," he added.

Spending will also be down at

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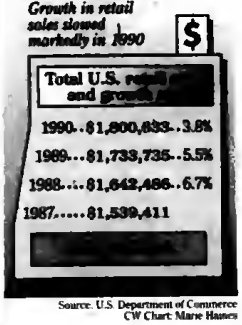
Idle registers

Growth in retail sales slowed markedly in 1990



Source: U.S. Department of Commerce
CW Chart: Marie Hanes

IBM widens parts stripping fight

BY NELL MARGOLIS
CW STAFF

STAMFORD, Conn. — IBM's widening bid to stamp out "illegal" trafficking in used IBM parts last week seemed on the verge of tilting its often uneasy alliance with third-party dealers into a cold war. Leasing industry executives predicted a lengthy dispute that could limit mainframe reconfiguration options.

Just one week after bringing suit against Comdisco, Inc., the largest independent computer leasing firm, the IBM Credit Corp. subsidiary filed suits Feb. 1 against Cambex Corp. and EMC Corp., which sell memory devices for IBM systems. IBM charged that the companies illegally stripped IBM equipment from computers leased by ICC.

The practice of subleasing and remarketing computer parts is a linchpin of the leasing industry, industry observers said. The practice attained prominence by satisfying user needs for flexibility at competitive prices.

Industry estimates vary as to how widespread the practices under ICC's investigation are.

Continued on page 4

POINTS OF CONTENTION

- ▶ IBM charges that Comdisco, EMC and Cambex illegally strip leased IBM equipment and resell parts.
- ▶ Industry execs claim resale practice is common, dates back to the '60s.
- ▶ IBM victory could limit user options, price breaks.
- ▶ Uncertainty to cloud leasing market until issues are resolved.

Hacker probe bogged down

Operation Sundevil case 'going nowhere'

BY MICHAEL ALEXANDER
CW STAFF

WASHINGTON, D.C. — Operation Sundevil, a crackdown on computer crime by federal and state law enforcers started last year, has come under renewed attack by two advocacy groups amid concerns that the investigation has stalled after nine months.

The Computer Professionals for Social Responsibility, a Palo Alto, Calif.-based advocacy group, filed suit against the U.S. Secret Service last week in a bid to force the agency to reveal details of the investigation.

Last May, more than 150 Secret Service agents teamed with local and state law enforcement agencies to execute 27 search warrants in cities across the U.S. The law enforcers seized 40 computers and 23,000 disks.

Facing a brick wall

The investigation is "going nowhere," according to a law enforcement source familiar with the case who asked not to be named. A second law enforcement source, who also asked not to be identified, said the case was "mired" and labeled it a "boondoggle." There have been no arrests, and none are imminent, the two sources said.

Robert Snow, a spokesman for the Secret Service in Washington, D.C., said Operation

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DEC finds software makes the sale

Last in a three-part series researched and reported by Computerworld*'s Maryfran Johnson, Alan J. Ryan and Sally Cusack*

One sells insurance, another produces soy proteins and the third deals in Wall Street trading systems.

Yet all three of these Digital Equipment Corp. customers exemplify a future in which DEC's proprietary hardware no longer wins the sale. What matters to these users is the vendor's abilities in networking, software development, services and systems integration.

digital
In Transition

At Phoenix Mutual Life Insurance Co.'s headquarters in Hartford, Conn., for example, DEC is co-developing a new approach to managing systems software that could significantly reduce code maintenance.

"What we've created together is analogous to an airport traffic controller, only it manages the interaction of software," said Robert Fiondella, president and chief operating officer at Phoenix Mutual. "DEC wants to get into software development, and we would like to create much greater capability in that area."

Halfway across the country in St. Louis, DEC has carved out a piece of IBM and Amdahl Corp. territory by becoming the primary supplier at Protein Technologies, Inc., a division of Ralston Purina Co.

"DEC had just as much to lose or gain as we did in starting up this company," MIS Director John Brauckseiker said of the 3-year-old Protein Technologies, which manufactures soy proteins and other products for food industries.

It was the number of process industry applications running on VAXs, not the hardware itself, that made that platform a compelling choice,

Continued on page 91

Windows close on New Wave

BY J. A. SAVAGE
CW STAFF

PALO ALTO, Calif. — Hewlett-Packard Co. bought into Microsoft Corp.'s Windows long before the latest version became an overnight success. However, HP has been having a tough time selling its Windows-based New Wave concept, and time may be running out.

New Wave, introduced four years ago and upgraded to support Windows Version 3.0 last May, works on top of Microsoft's graphical user interface to provide an object-oriented approach to data manipulation while hiding the complexity of the process from the user.

Several vendors, including NCR Corp. and AT&T, signed up early to incorporate New Wave into their platforms, but the market is in such an early stage that few New Wave applications have actually been shipped, according to analyst Michael Goulde at Open System Advisors, Inc. in Boston. Furthermore, early enthusiasm may be waning, analysts observed.

Microsoft is pledging a highly object-oriented Windows Version 4.0, which is expected to be released sometime in 1993. However, the company has already begun to implement its object linking and embedding concept, which promises to include some New Wave-like capabilities. This has some users in a wait-and-see mode.

Howard Woodard, information systems manager at Federal

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Product Spotlight — The formula for flexible manufacturing begins with three main ingredients. Page 59.

Borland readies visual end-user programming tool for Windows. Page 10.

Systems Center develops integrated, centralized management across IBM's major systems platforms. Page 6.

IBM retooling plans for a SQL link to its IMS database. Page 93.

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8 'We don't make compromises': Hoping to save fuel, **Saab** has driven away from its mainframes for AS/400 midrange systems.

10 Even if they can't speak the language, users will be able to create programs graphically using **Borland International**'s new Objectvision application builder.

12 Litigation set-asides have put **Ashton-Tate** in the hole for fiscal year 1990.

16 A new computerized radar system is scheduled to take wings at **Los Angeles International Airport** in the spring, replacing the airport's reportedly aging and unreliable system.

90 Among expected announcements at Networld '91 will be IBM's proposal to support LAN Server and Novell Netware interoperability.

92 Merrill Lynch's former IS second-in-command, **Bruce Turkstra**, has stepped into the role of managing director of IS at Arthur Andersen.

Quotable

"If I didn't make my purchase last year, it would be very difficult to buy this year."

DENNIS MEEH
MCCURDY & CO.

On running an IS shop in a troubled retail sector.
See story page 1.

SYSTEMS & SOFTWARE

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The 5th Wave

"BETTER SEND SOMEONE UP—WE'VE GOT ANOTHER BEAR TANGLED UP IN THE WIRING."

EXECUTIVE BRIEFING

■ **In a time when malls seem hauntingly bare of shoppers,** the information systems groups in the retail sector may be called on to carry their companies through the recession. It is no secret that retail chains are suffering. However, they may end up spending more on information technology than other sectors will, hoping that new systems will strengthen them for the future. **Page 1.**

■ **So far, it has been the price war to which nobody has come.** Industry observers have been predicting major price cuts in the laptop industry for at least three months, but the cuts haven't appeared. That should change in the next few months, however, as more name brands hit the shelves and pent-up demand abates. **Page 6.**

■ **Appropriating other people's good ideas** isn't stealing when it comes to quality assurance. Just ask IBM, which makes no secret of the fact that it learned from the success of others when it came to setting up its Application System/400 production facility in Rochester, Minn. The result was the U.S. Commerce Department's Malcolm Baldrige award for quality. **Page 71.**

■ **The fight is turning nasty** as IBM knocks heads with lessors and mainframe parts dealers. IBM's lawsuits claim its rivals are stealing IBM Credit Corp. parts. The rivals and some industry observers say ICC is trying to intimidate the opposition and could hurt users. **Page 1.**

■ **AT&T's Tariff 12 lives,** but AT&T competitors still wish the big-customer bulk-buying communications offering would fade into the woodwork. Most observers are betting that despite the industry opposition and a court order calling for refinements, Tariff 12 will survive pretty much the way it is now structured. **Page 43.**

■ **Saab Cars USA, Inc. figures to save $5 million over the next five years** by shifting from Unisys Corp. mainframes to IBM AS/400 minicomputers. This move comes on the heels of an outsourcing decision at Saab's parent company in Sweden. **Page 8.**

■ **Speaking of savings,** Blue Cross expects that it can chop $5 million per year off of its communications budget by building a national network. In addition, the Unified Network strategy is expected to smooth communications among the 73 Blue Cross plans spread throughout the U.S. **Page 12.**

■ **A new version of the Specmark** test may make it easier to test the performance of high-end workstations and multiuser systems. **Page 35.**

■ **Can age play against an IS professional** in a job search? Don't look for that to be the problem. Rather, open up your options, market yourself better, and don't back yourself into corners. **Page 75.**

■ **Manufacturers that need to respond better to customer demand** and produce wider varieties within a product line are starting at the factory floor and building up. 'Flexible manufacturing' applications start at the machine level but appear at all levels of the company, including operations and corporate. **Page 59.**

■ **On-site this week:** Spending $12,000 once to save $130,000 per year isn't such a bad deal, as Norwalk, Conn.-based Gateway Bank discovered when it switched from microfiche to optical storage. **Page 51.** There are some new elements showing up in Federal Express' Cosmos² package tracking system — peer-to-peer networking and Unix. **Page 29.** It was a natural evolution for Arkansas' food supplement agency when it opted to automate a benefits program by adding Wang minicomputers rather than Unix systems or personal computers. **Page 32.** Seeking to cope in a coffee market that is as volatile as the stock market, Nestle/Hills Brothers Coffee has turned to PCs for use by its analysts and coffee buyers. **Page 37.**

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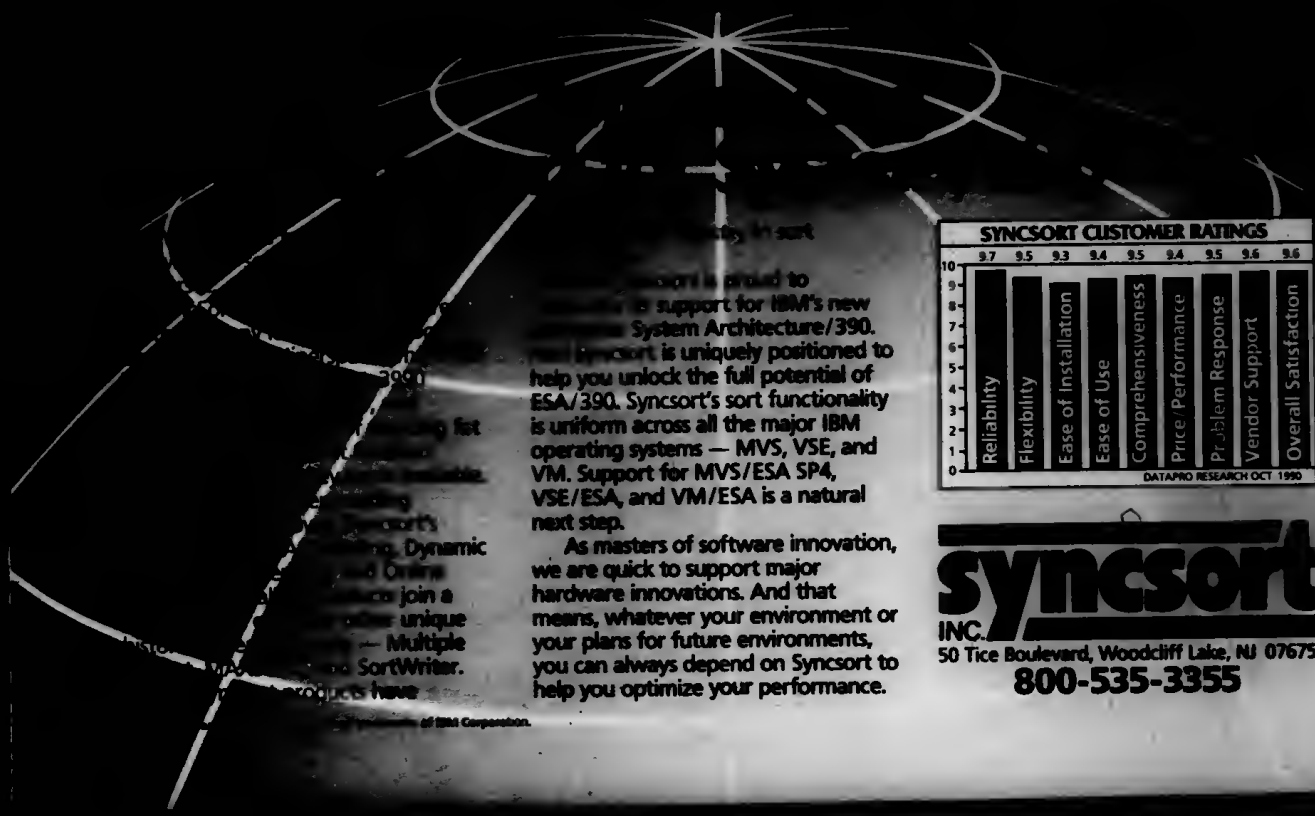

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Compaq ready to offer direct support

Most observers happy with plan, but pricing plan may discourage users

BY RICHARD PASTORE
CW STAFF

HOUSTON — Compaq Computer Corp. is scheduled to announce its first direct technical support service for customers today. Observers said they see the move as an incentive to boost system sales, but they disagreed on its relative worth to users.

Beginning March 4, $3,000 will buy users 10 solutions per year via telephone on technical subjects such as system compatibility, installation and configuration questions and problem isolation. The service applies to any Compaq platform and supported operating system.

Support contracts, which can be purchased from dealers, include a subscription to Compaq's Quickfind Support Reference Library on compact disc but do not cover on-site service.

Compaq, which has no direct sales force and is reliant on dealers, may risk alienating some by going direct. But some resellers familiar with the plan were appreciative.

"I think it will be a help to us," said Ed Michelson, a partner at a Computerland Corp. franchise in San Diego. "For those customers that feel more comfortable with the manufacturer, the mere fact that we would offer [the direct support option] would help in selling Compaq products."

Platform complexity and dealer shortcomings appear to have forced Compaq's hand. "It became clear that we needed a combination of our authorized dealers and Compaq to address the kinds of inquiries [users] were making," explained Ross Cooley, Compaq's North America vice president.

"The move is overwhelmingly positive for customers because they'll get the support they need at the very high level," said Seymour Merrin, president of Merrin Information Services in Palo Alto, Calif.

Some users agreed. "I think it's a good idea. With more complicated machines, the dealers will need some other way of getting the knowledge out there," said Compaq Systempro user Gerard Nussbaum, MIS director at Premier Hospitals Alliance, Inc. in Westchester, Ill.

Being able to cut out the dealer and go directly to the manufacturer will eliminate "a long daisy chain of problems and timing," added Patrick Farley, network administrator at the New York City Transit Authority.

While some called the support program a bargain for users and a loss leader for Compaq, others said it is too pricey for lip service.

"Three hundred dollars per problem is expensive, and how many problems can really be solved over a phone?" asked Lee Levitt, an analyst at International Data Corp. in Framingham, Mass.

New York Life Insurance Co. pays Businessland, Inc. $30 per solution for multivendor phone support. Compaq's fee structure, which is 10 times higher, "will scare some people away," New York Life Assistant Vice President Robert McLoughlin said.

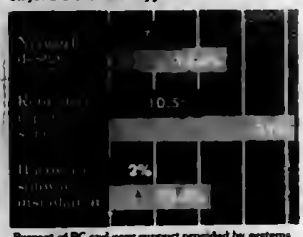
Cox Cable, Inc. pays $5,600 annually for Systempro support from Intelligic Trace, Inc. The fee covers on-site repair with two-hour guaranteed response time — something Compaq does not include. "I prefer our route because it integrates hardware repair and [phone] support into one package," said Mark Olsen, a systems analyst at Cox.

Beginning March 4, Compaq will also implement a toll-free direct support line for general product questions. In addition, this spring Compaq will designate resellers that have achieved expertise in selected operating systems supporting Compaq CPUs as "Specialized Dealers."

Compaq's *Cooley: Direct service needs 'became clear'*

Looking to the source

Systems vendors are increasingly being called on for PC end-user support



Percent of PC end-user support provided by systems vendors (base: 500)

Source: Ledgeway/Dataquest CW Chart: Doreen St. John

IBM

FROM PAGE 1

"It's not just Comdisco, EMC and Cambex, that's for sure," said Tom Martin, president of Hackensack, N.J.-based Computer Financial, Inc. "But people who say that everybody in the industry is cannibalizing machines are exaggerating greatly. Lessors who take aggressive business stances are doing it — I'd say at most, that's about half of the leasing companies that deal heavily in mainframes."

"I wouldn't say that the kind of upgrades and downgrades that IBM is talking about are widespread practices," industry consultant James Hassett said. "On the other hand, it isn't rare. It's being done."

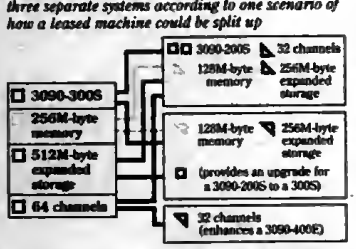
Subleasing has been commonplace since the 1960s with increasing use as IBM mainframe generations have become more modular, EMC Chairman Richard J. Egan said. "Some [firms] do it all the time," he said. "Some do it occasionally. I think everybody's going to get got."

To the contrary, an ICC spokesperson said, ICC is out to stop only those who steal. The suits, the spokesman said, "are not aimed at the third-party market. They are not aimed at subleasing. They are aimed at specific companies' instances of taking property that belongs to us and using it as though it were theirs."

Once a modest sideline, the sublease business boomed when IBM introduced the 3090 family — an increasingly modular generation of machines that enabled inventive third-party competitors with access to a panoply of used parts to "build" mix-and-match mainframes tailored to the customer's requirements.

Market basket

Features in an IBM 3090-300S could end up in three separate systems according to one scenario of how a leased machine could be split up



Source: Technology Investment Strategies Corp. CW Chart: Paul Mock

ICC's contention is that there is a difference between subleasing and stripping, between contractually agreed-on use of IBM parts and the cannibalizing of IBM machines. Many third-party leasing executives agreed. However, they said last week, the industry could be in for a long, hard season as the players attempt to draw the lines.

Some industry insiders said they see the current spate of suits as IBM's new tactic in pursuit of an old strategy.

"This is just a delaying action to confuse the industry," said Paul Shook, senior vice president at Concord Leasing, Inc., a Norwalk, Conn.-based investment banking firm. "The time and resources IBM is causing us to spend on [the subleasing issue] are diverted away from the *real* issue, which is microcode."

The controversy between IBM and the third-party lessors over how IBM restricts access to the instructions underlying its systems has been working its way through the courts since the mid-1980s. The most recent ruling in the series of suits — popularly known as "the AMI case" — was a sweeping victory for IBM on most points. However, the judge's language left open the possibility that IBM's efforts to control microcode could be seen as violating antitrust law.

Industry analysts widely agreed that appeals are likely to come from both sides; few said they expected a resolution of the AMI case in the near future. Meanwhile, the Computer Dealers and Lessors Association (CDLA) hired the New York-based law firm of Weil, Gotshal & Manges last November to study the microcode controversy and advise the third-party companies as to possible legal and administrative strategies. In addition, a CDLA spokesman said, the association personally forwarded a copy of the latest AMI ruling to the U.S. Department of Justice.

Industry executives last week differed on the extent to which the microcode issue and the issues raised in the Comdisco, EMC and Cambex suits are related. None of those interviewed by *Computerworld*, however, said they believed the issues were entirely unrelated.

Meanwhile, Shook said, the speculation and uncertainty surrounding IBM's recent actions are likely to restrict the options of not only the named defendants and every leasing company that begins to be talked about as a probable "next" on IBM's list but also of the customers who are privy to the subleases and reconfigurations from IBM.

While it is unlikely IBM would sue a big customer, Shook said, the uncertainty makes users "much more likely to throw up their hands and say, 'Oh, heck, let's just deal with no one but ICC.' "

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Notebook PC price war on hold

BY RICHARD PASTORE
and MICHAEL FITZGERALD
CW STAFF

Pundits have been predicting a price war since October, as throngs of cut-rate notebook personal computer announcements followed Compaq Computer Corp.'a LTE introduction last fall. So far, pent-up demand and no-show competition have kept the battlefield relatively quiet, but that may change as major brands finally hit the shelves over the next eight weeks.

Larger portable PCs have taken a price beating since last year, "but notebooks — and particularly Compaq — have not," observed Richard Nelson, quality and cost department manager at US West in Denver.

"Compaq has the Compaq mystique," explained Will Fastie, editor of "The Fastie Report" in Baltimore. "As long as that'a the case, their prices will remain premium prices." Compaq'a Intel Corp. 80386SX-based LTE lists for $6,500 to $6,999.

What's in a name?

IBM is also expected to leverage its name when it unveils a 386SX notebook later this spring. Industry observers said the IBM product will be priced from $5,000 to $5,500.

However, these lofty price tags may finally come under fire as other respected brands begin shipping machines costing thousands of dollars less.

For example, Dell Computer Corp., which has earned kudos for quality and support, announced a $3,399 LTE look-alike last week that is expected to ship by the end of next month.

Dell'a 320N notebook includes 1M byte of memory, an internal floppy drive, a 30M- or 60M-byte hard disk and an IBM Video Graphics Array-compatible display. The system weighs 6.4 pounds — one pound less than the LTE — and uses a Ni-cad battery rated at 3½ hours. Dell also announced an Intel 80286-based notebook with a similar configuration starting at $2,399.

"I think Dell could really hit the market hard at that mark," Nelson said. "We'd probably get a couple just to see how they do."

Another player expected to stir up the action soon is AST Research, Inc., with its $2,995 Premium Exec 386SX/20.

"One of the big swingers in the whole [pricing] equation is the issue of AST and when they are going to be delivering in quantity," said Jerry Rycaj, marketing and communications manager at Texas Instruments, Inc. in Temple, Texas. Like many other firms that announced products late last year, AST has been hampered by component constraints and missed its original January shipping date.

Rycaj said AST'a price point has earned it "a lot of recognition" and said that when its boxes hit the market, other name vendors may drop prices. AST claimed it will ship in volume by mid-February.

There have already been scattered instances of pricing movement, an omen of things to come perhaps. Everex Systems, Inc., one of the first companies to actually ship an SX notebook, has cut prices from $3,499 to $2,999. Samsung Information Systems America also dropped prices across its product line, including its just-shipping 386SX-based notebook.

Despite the scarcity of low-priced units, some users are already picking sides in the cost conflict. "Compaq is just too pricey," said Enrique Crespo Jr., manager for end-user computing at Torrington Co. in Torrington, Conn. The firm is reluctant to spend more than $3,000 for a notebook right now, he said.

"I'd look for notebook street prices of $2,500 to $3,500," added Frank Nestor, MIS director at Summit Consulting, Inc. in Lakeland, Fla. Nestor said he could not justify paying Compaq'a LTE prices.

Market dissection

386SX-based notebook PCs have already spawned several tiers of pricing points

Base price

[illegible] • AST Research, Zeos International, ALR, Everex

$3,000 - $4,000 • Twinhead, Samsung, Dell, Epson, Astarte

[illegible] • Toshiba, Libretto

$5,000 - $6,000 • Texas Instruments, IBM*

[illegible] • Compaq

*Industry observers expect an IBM announcement in this price range

CW Chart Tom Monahan

Systems Center won't wait for IBM platform

BY ELISABETH HORWITT
CW STAFF

RESTON, Va. — Systems Center, Inc. is developing a platform to provide integrated, centralized management across all of IBM'a major systems platforms — well ahead of IBM'a projected rollout of its Systemview architecture.

Systems Center plans to support key Systemview elements, such as the data engine, user interface and applications programming interface, according to Application System/400 development manager Malcolm Marais. However, Systems Center is not waiting for IBM to firm up those specifications before it begins development, he added.

Neither vendor would provide a definite time frame for moving from the architectural to the commercial phase of its systems management platform.

IBM has announced plans to release Systemview user interface and data structure specifications this year. However, "Systemview is not yet a viewgraph, let alone a product," said David Passmore, a principal at Ernst & Young.

Systems Center is now working to integrate its existing Unix and IBM VM, MVS and AS/400 system management products into a common "enterprise management solution" that will include a data repository, a user interface and integrated applications, Marais said.

The first element of that platform, AS/Hub, was introduced last week. The product is said to provide centralized monitoring, maintenance, backup and software distribution for a network of AS/400s. The product also includes an object-oriented data repository, Marais said.

US Air is one IBM shop that would consider a third-party product that provided "a common data repository and central point to look at everything," said Randy Bucknell, a senior systems programmer at the airline. However, the product would have to come out significantly earlier than Systemview, Bucknell said.

Original intentions

At the Systemview announcement, IBM said it would release specifications by which third parties could support its data repository structure by third-quarter 1991 and its user interface by the end of this quarter.

Most IBM customers will wait for Systemview rather than take a flyer on a third-party vendor, Passmore said. While Systems Center promises eventual Systemview compliance, the company is buying a thorny migration path for its customers and independent software supporters by refusing to wait for Systemview specifications, Passmore said.

On the other hand, Systems Center'a offering is likely to find a niche among companies with a mixture of IBM and non-IBM computers, Passmore said.

The AS/Hub product fills a need among users who "don't want to buy an IBM mainframe with Netview just to have centralized AS/400 management," he added.

HIGH-TECH BATTLEFIELD

One reason the U.S. Air Force can fly so many sorties per day in Operation Desert Storm is that computers have dramatically cut the time it takes pilots to plan missions — reportedly from about eight hours to 30 minutes. Fighter pilots use a ground-based computer system called the Mission Support System II (MSS II) to rehearse and select the best routes for an attack.

The system takes the latest intelligence and mapping data to produce three-dimensional views of the fighter's route to the target, according to Brian Cooper, an official at Fairchild Defense Co. in Germantown, Md. He said MSS II software runs on Dynatech Corp.'a Crumemco CS-250 microcomputer, with a Digital Equipment Corp. Microvax II running in parallel to handle the color graphics.

Cooper said the system produces "radar predictions" that give the pilot a preview of what the landmarks and the target will look like on radar at night.

The Air Force Space Command has begun to link data from its Defense Support Program missile-warning satellites to the U.S. Army troops firing Patriot missiles, according to *Aviation Week & Space Technology* magazine. The satellite links provide the missile crews with nearly real-time information on the launch of Iraqi Scud missiles, increasing the chances for successful Patriot intercepts, the report said.

In addition, "improved communications" are enabling the satellites to provide five minutes' warning of a Scud impact, compared with about two minutes when the conflict began, the magazine said.

Telecom Australia International is keeping a 106-member team of advisers in Saudi Arabia amid the Gulf hostilities, according to *Computerworld Australia*. Telecom Australia is maintaining Saudi Arabia'a telecommunications network under a 1988 contract.

Peter Thomas, Telecom Australia'a director of corporate communications, said Telecom Australia has contingency plans in place should the need arise to move its people quickly from danger areas.

Keith Barnes, Telecom Australia'a senior adviser, said most exchanges would be able to cope with the heavier transmission demands being made.

Some press reports have expressed concern that many U.S. high-technology weapons depend on Japanese chips. Not so, said Gregory Sheppard, a military semiconductor analyst at Dataquest, Inc. in San Jose, Calif. Most of the avionics chips used for Operation Desert Storm are made by U.S. companies under military specifications, he said. Sheppard said the confusion may stem from the fact that the ceramic packages protecting the chips are made by Japan'a Kyocera Corp.

Intel Corp. is making provisions in case its manufacturing plant in Haifa, Israel, becomes embroiled in the Gulf war, said David House, president of Intel'a microcomponents group. "Because of the volatile situation, we have installed in an existing factory in Albuquerque all the equipment needed to make 80386s and I486s. I think we're in pretty good shape there."

A slim majority (53%) of business economists said they feel business prospects for 1991 have worsened as a result of the Gulf war, according to the National Association of Business Economists. The pessimists predicted the war will reduce sales volume.

Compiled by National Correspondent Mitch Betts.

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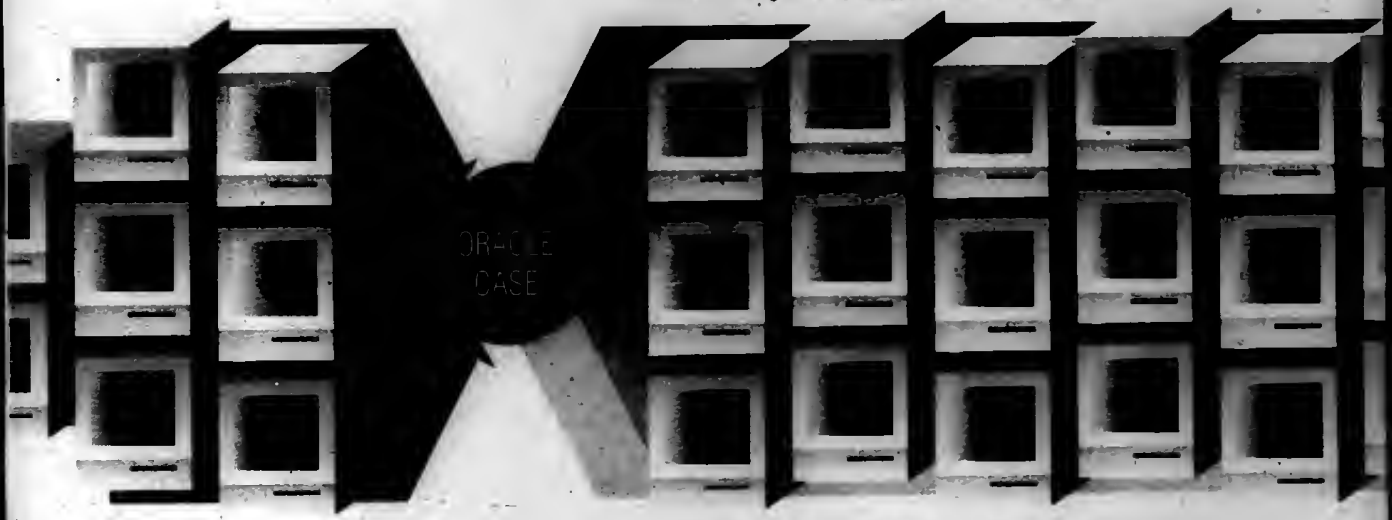

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NEWS SHORTS

Postal service signs pact

Trying to be more competitive in the overnight delivery business, the U.S. Postal Service signed a $129 million contract with Systemhouse Federal Systems, Inc. in Arlington, Va., last week for a system to track and trace Express Mail items. Customers will be able to call a toll-free number to check the status of scanned items, which will be tracked by IBM mainframes at the Systemhouse data center in Houston. Subcontractors include Unisys Corp.; IBM for the data communications network; and Symbol Technologies, Inc. in Bohemia, N.Y., for the scanners. The five-year contract could be extended to 11 years, totaling $270 million (see story page 29).

The cow did it

With memories of Mrs. O'Leary's cow, a dead cow was blamed for a four-hour interruption in AT&T's telephone service to parts of Birmingham, Ala., and Nashville last week. It seems a farmer attempted to bury a deceased bovine above an AT&T fiber-optic cable running between Birmingham and Farmington, Tenn., utterly destroying the cable. An AT&T spokesman said phone traffic in the area was quickly steered around the break by AT&T's Network Management Operational Support System.

J. C. Penney tries ISDN

J. C. Penney Co. said last week that it is three months into an Integrated Services Digital Network (ISDN) trial that involves transmitting high-resolution still images from one device on a corporate local-area network to a file server on another remote LAN. The company said the test could lead to eventually using increments of ISDN's dial-up, 1.5M bit/sec. bandwidth to send the still images between stores and corporate buyers to facilitate the final selection of merchandise styles and colors.

Intel sets up Noyce fellowships

Intel Corp. has established the Robert Noyce Memorial Fellowship Fund in honor of the late Robert Noyce, Intel cofounder and inventor of the microchip. The fund, which Intel started with a $500,000 grant, honors Noyce's commitment to the computer industry by supporting graduate students with technical backgrounds whose goals are to improve U.S. industrial competitiveness in the world economy, according to Gordon Moore, Intel's chairman. Intel said that so far the fund has acquired $1.2 million and has been endowed at four universities: University of California at Berkeley; University of Texas at Austin; MIT; and Grinnell College in Grinnell, Iowa.

Oracle ports CASE tools

Oracle Systems Corp. said last week that it has ported its computer-aided software engineering (CASE) tools to IBM's MVS, VM and AIX operating system environments. The CASE tools include a repository, an application generator and a CASE graphical tool kit for data modeling. The same suite of CASE tools was announced in November for the desktop OS/2 and MS-DOS operating systems, for the Unix environment and for Digital Equipment Corp.'s VMS. Prices for the suite of CASE products range from $20,000 to $200,000, depending on the target machine.

Dell trims prices, adds PCs

Besides its first notebook personal computers (see story page 6), Dell Computer Corp. announced across-the-board price cuts and three high-end desktop models last week. The Dell Systems 325P and 333P are low-profile boxes based on the 25-MHz and 33-MHz Intel 80386DX chips. Base prices are $2,249 and $2,649, respectively. Each can be upgraded with a user-installable Intel 33-MHz 1486 upgrade card, which costs $2,399. Dell also announced a low-profile 486-based unit for $4,999. Dell's price cuts, which are effective immediately, range from $100 to $900.

More news shorts on page 92

Saab Cars shifts gears to IBM

BY MARYFRAN JOHNSON
CW STAFF

ORANGE, Conn. — Driving toward a savings of $5 million over the next five years, Saab Cars USA, Inc. recently shifted from mainframe computing to a distributed system of IBM midrange machines and workstations.

Saab's Ioli *drives toward IBM equipment for savings*

As the largest of nine Saab importers worldwide, Saab Cars USA is a subsidiary of Saab Automobile AB in Trollhattan, Sweden. The parent company outsourced its entire corporate information systems division last month to Electronic Data Systems Corp. in a 10-year, full-service takeover.

The outsourcing deal, however, has no direct impact on the Saab importers, which have all chosen the IBM Application System/400 platform to anchor their new distributed computing environments. Saab Cars USA will move off of its Unisys Corp. 1100/2200 mainframe by early 1993 while the European importers leave behind their Nixdorf Computer AG mainframes.

"The key reason we chose the AS/400 was the immediate availability of applications packages," said Nicholas L. Ioli Jr., director of IS at Saab Cars USA. Cost reduction, technology upgrade and the inclusion of the AS/400 in IBM's Systems Application Architecture plans also figured into the decision, he added.

For the company whose slogan is "We don't make compromises. We make Saabs," the aging mainframe technology was indeed compromising the firm's ability to respond to the slump hitting the car industry and luxury car companies in particular.

"With the competition these days, you have to be extremely agile," Ioli said. One example is Saab's new six-year, 80,000-mile warranty for 1991 cars, for which the IS department must maintain records in a specially designed application.

A 20-year IS veteran with experience at Timex Corp. and Comdec Corp., Ioli joined Saab last year with a mandate from the board of directors to increase competitive advantage, develop more effective business functions and deal with the applications development backlog.

The IS staff — reduced by 25% from a companywide layoff and the downsizing project — is now evaluating packaged software in three of its four main application areas: car sales and distribution; sales of parts and accessories; and finance and accounting. For services and warranties, the company will build its own applications, Ioli said.

By May, it is expected that the company's 400 users will be trained on IBM's Officevision/400 for all office automation, word processing and electronic mail.

Over the next two years, Saab Cars USA will set up full IBM Token-Ring connectivity between its headquarters and distribution and parts centers in Union City, Calif., and Meriden, Conn. The network will be anchored by three AS/400s and a dozen IBM Personal System/2 workstations, with 400 personal computers and some Sun Microsystems, Inc. workstations.

Retail pinch

FROM PAGE 1

McCurdy & Co., a local privately held retailer based in Rochester, N.Y. McCurdy's runs nine full-line department stores and 12 B. Foreman & Co. specialty stores.

Dennis Meeh, vice president of IS at McCurdy's, cited economic conditions and the end of several lease-to-own equipment agreements as reasons for reduced spending. He said that the company bought an Application System/400 in 1990, adding, "If I didn't make my purchase last year, it would be very difficult to buy this year."

Overall, retailers will increase IS spending slightly in 1991, although spending will not increase as a percentage of sales, several consultants said.

"I see spending on all fronts for hardware and increasing spending on software," said Stephanie Shern, national director of retail services at Ernst & Young.

At 123-year-old, Philadelphia-based Strawbridge & Clothier, a $1 billion regional retail chain with an upscale department store chain and a Clover Stores discount division, sales are down, but technology expenditures remain on track according to a long-term plan. "Because information systems technology is an integral part of our corporate strategy, you have to stay on game plan," said Tom Rittenhouse, corporate vice president and controller.

Sears, Roebuck & Co. has seen its merchandise group become bogged down in recent years. This year, Sears will finish a four-year game of technological catch-up. On the platter is a back-office system for its stores that is now being rolled out and will allow Sears to cut 21,000 employees, with direct savings of some $250 million.

"During a tough economy, a tough business outlook, I've seen business heads just get up and say, 'We've gotta have it,'" said Robert Ferkenhoff, vice president of MIS for all of Sears' retail operations.

Shern said that retailers will be spending on technology to do "all kinds of customer marketing and merchandising information that retailers don't have today" and that they will spend heavily on expert systems as well as basic technology improvements, such as new point-of-sale (POS) terminals, Ernst & Young's data showed that 54% of retailers have POS systems that are more than six years old.

"None of these retailers can do all of these things in any one year," Shern said.

Senior Editor Clinton Wilder contributed to this report.

To have or have not

Even within narrow segments of the retail industry, the recession has left some information systems organizations in contrasting have/have not situations.

At Toys 'R Us, spending cutbacks are unlikely, despite a poorer-than-expected fourth quarter.

"We've been growing at roughly 20% a year. We've never had that downturn [in sales]," said Dennis Healey, the firm's vice president of MIS. "If it does turn down, my guess is that the IS budget will go up because we will probably try to automate [more tasks]."

By contrast, Child World, Inc. has been badly hit by the recession and is in a severe cash-flow crunch.

"It affects us dramatically because money is very tight," said Hy Waxman, vice president of MIS at the Avon, Mass.-based toy seller. "Projects and systems and equipment we implement have to be justified through hard savings."

Waxman said that the IS department will be spending less this year than last. He said fewer than 10 employees had been laid off, bringing the department total to less than 50.

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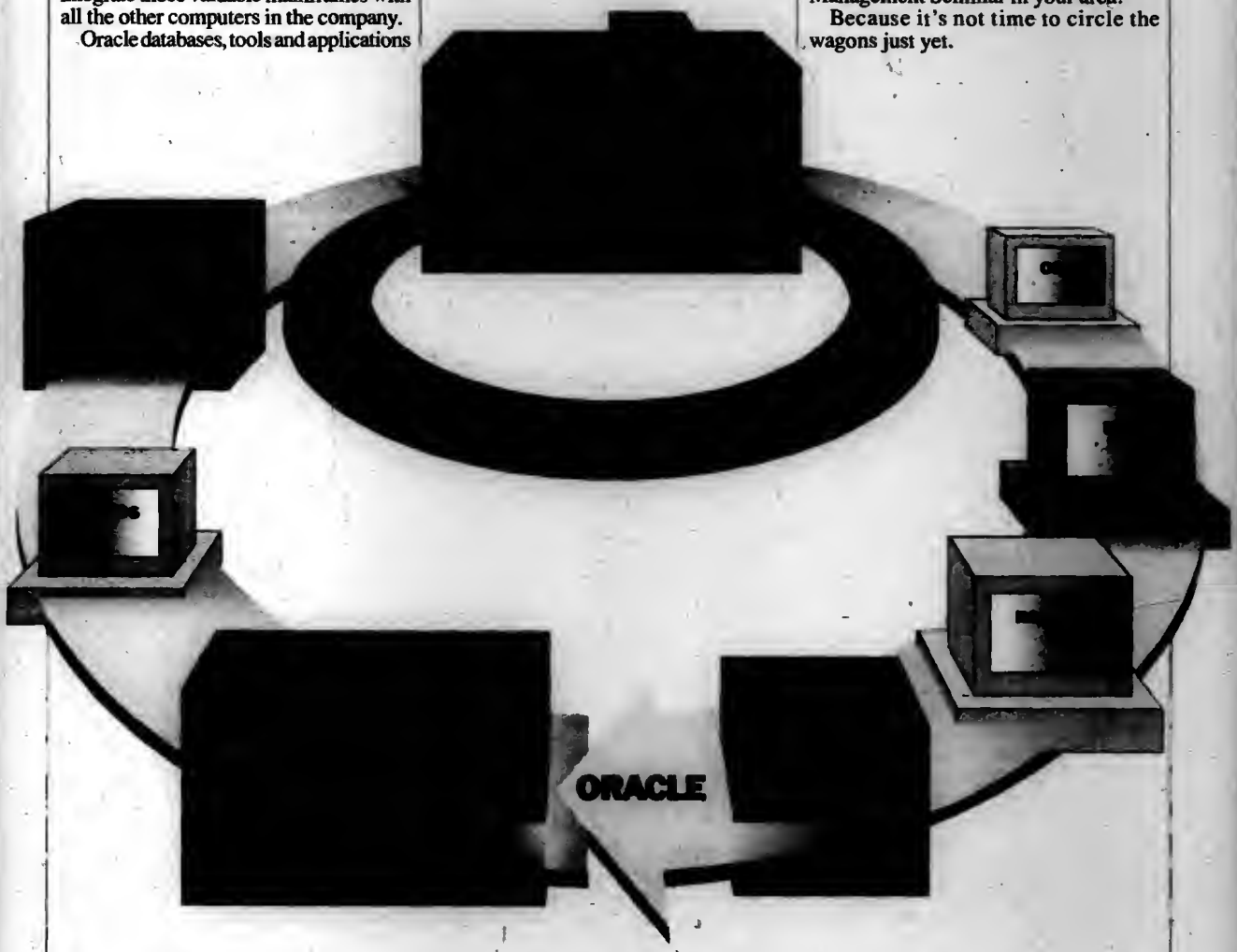

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Borland readies Windows programming tool

BY JAMES DALY
CW STAFF

SCOTTS VALLEY, Calif. — Borland International, Inc. will introduce its first end-user product for Microsoft Corp.'s Windows tomorrow when it announces Objectvision, an application builder that uses visual programming techniques to help users create applications without the hassle of learning a programming language.

Objectvision is a highly graphical package that employs an on-screen form design as a tool to create Windows applications, according to early users. The application foregoes typical programming methods such as relational database structures, files, cards and books.

With Objectvision, a user builds applications by drawing a screen interface and then attaching properties to the objects in the form. Decision trees — pictorial descriptions of available alternatives — are included in fields on the form, and the fields are linked either to local or networked external data files.

Objectvision exploits the same type of declarative nonprocedural logic found in spreadsheets, which defines the answer or expression and the circumstances under which such an expression occurs. Most application creation tools use procedural logic in which the programmer defines the steps to be taken to determine an answer.

Not alone in the market

Some analysts said Borland could face competition from Mountain View, Calif.-based Software Publishing Corp., which offers point-and-click application development with its Infoalliance data integrator. However, Borland insiders said the price of Objectvision will be significantly lower than Infoalliance, which starts at $8,500 for 10 users.

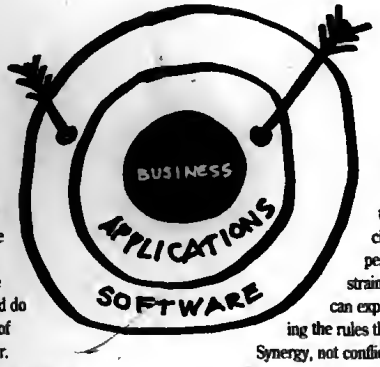
While early users said Objectvision wins points for ease of use, they disagreed with Borland's use of a new nonstandard graphical user interface.

"Our users see the graphical user interface as a rallying point where we go for consistency, not for something different," said William Conley, manager of information technology service at Loral Aerospace Corp. in Newport Beach, Calif. "The Objectvision graphical approach may be revolutionary, but we don't need another revolution."

Objectvision can also access data from multiple database sources on a network as well as applications that support Windows' Dynamic Data Exchange. SQL links are reportedly in the works.

Pricing and availability details for Objectvision were not available.

As long as the aim of CASE vendors is better software, they'll be off-target.



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IBM Business Partner

HP venture could fuel repository

BY J. A. SAVAGE
CW STAFF

An equity stake in Informix Software, Inc. by Hewlett-Packard Co. that was announced last week could result in an IBM AD/Cycle-type repository product for Unix-based systems.

"We're looking at a repository like IBM's for the Unix environment," said Phil White, chief executive officer at Informix.

Late last month, Informix announced that it was combining HP's Softbench computer-aided software engineering (CASE) enviroment with its fourth-generation language tools.

A repository is the core of the software engineering process and can be best thought of as a higher level or more advanced database. It goes beyond a traditional database by storing and managing information about the data and processes related to software engineering.

"I'm not sure just another repository is a solution," said Darlene Brown, an analyst at Gartner Group, Inc. in Santa Clara, Calif. She said the only open standard for repositories, called Portable Common Tool Environment, comes from Europe. HP has adopted it for its CASE strategy, but White would not say whether a repository product from Informix would use that standard.

HP became the second business to invest in Informix during the last three months. Informix said HP may buy as much as 15% of the company. The first investment from HP will be a 5% stake, valued at $3.5 million. The next 5% purchase is to be completed by April 1992, with the third 5% investment still open. ASCII Corp., a Japanese firm that announced its investment in Informix in November 1990, has the same 15% option.

Analysts said Informix could use the money. Revenue has been gaining, but profits have been flat for the last year, a spokeswoman said. HP also has a stake in another database product line, Ingres, through Ask Computer Systems, Inc. HP owns 10% of Ask, and Ask owns Ingres.

HP does not see a conflict with the two database companies, according to Bernard Guidon, general manager of HP's Unix systems. "The customer will look at which database is the best fit. If you like Ingres, we have it. If you like Informix, we have it as well," he said.

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Blue Cross unifies nets

BY ELISABETH HORWITT
CW STAFF

CHICAGO — Blue Cross and Blue Shield Association is replacing a "spaghetti bowl" of communications lines with a hybrid public/private network that is expected to save the company $5 million annually.

The association announced last week that its Unified Network strategy will provide crucial coordination and information sharing among its 73 organizations throughout the U.S.

Improving communications among the health insurance organizations was the "primary driver" behind the network plan, said Robert Schultz, senior consultant for the project.

Because each member group is an independent business entity, Schultz said, "it was a real challenge to bring them together" so they could go over and support national accounts more effectively.

The new system was designed to allow plans to transmit more than 20 billion characters of information among the member organizations each month.

Blue Cross chose four "quasi-business partners," according to Schultz. AT&T will provide leased lines for the private network; Timeplex, Inc. will supply the T1 multiplexers; IBM's Information Network will provide value-added network connections to customers and smaller sites; and Systems Center, Inc.'s Network Data Mover software will handle batch transfer of customer files between IBM hosts for claims processing at various plan locations. About half of the network's traffic is batch and half is interactive, Schultz added.

Two years in the making

Technical and business members from all of the major plans spent two years designing a hybrid network that "met our very specific business requirements," Schultz said.

A high-speed dedicated backbone supports the high-traffic requirements of certain plan locations, while a value-added network service links other plan locations and will eventually extend to participating health-care providers, government partners, suppliers and major customers.

Blue Cross will initially limit its Unified Network to IBM Systems Network Architecture (SNA) transmissions because "virtually all 73 plans have IBM or IBM-equivalent mainframes," Schultz said.

However, the company plans to provide support for other popular network protocols to facilitate access for non-SNA users outside the company, according to Schultz.

Earlier this month, the IBM Information Network was serving about 75% of its projected user base, with the rest scheduled to go on-line by early July, Schultz said. The private network backbone should be fully operational a couple of months after that, he added.

Blue Cross' Washington, D.C., plan office will act as a network management center and help desk using IBM's Netview and Timeplex's Timeview to administer the private side of the network, Schultz said. IBM Information Network will manage its own circuits.

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Legal fees set Ashton-Tate back

BY JAMES DALY
CW STAFF

TORRANCE, Calif. — Ashton-Tate Corp.'s continuing legal battles got the better of its finances in the quarter ended Dec. 31, when litigation expenses negated a slim profit and resulted in a $5.6 million loss for the software maker.

The firm posted $500,000 in operating profit but then set aside an $8.5 million provision for future legal expenses. This legal reserve, combined with income taxes, resulted in the $5.6 million — or 22 cents per share — loss.

Ashton-Tate reported a net loss of $1 million, or 4 cents per share, for the comparable period last year. Net revenue for the quarter was $65.1 million, a 5% increase over the $62.1 million reported in the fourth quarter of last year.

For the year, the company reported a loss of $18.1 million, or 69 cents per share, compared with a loss of $28.6 million, or $1.09 per share, one year earlier. Net revenue fell 13% from $265.3 million to $230.5 million.

Alleged securities violation

The legal action that caused the $8.5 million set-aside stemmed from a June 1989 shareholder class-action suit that accused the firm of violating federal and state securities laws in its disclosure of financial results.

A spokeswoman said the litigation was still pending and declined to speculate whether a settlement was likely to be reached soon.

Despite the setback, President Bill Lyons remained optimistic, citing a 12% increase in sales of its Dbase IV database program over third-quarter figures.

However, Lyons added that "we remain cautious for the future due to the war in the Persian Gulf and uncertain economic conditions in many countries."

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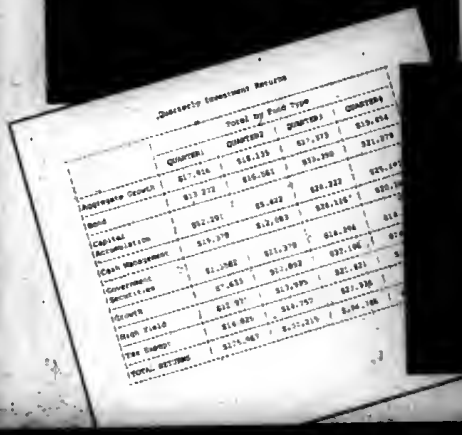

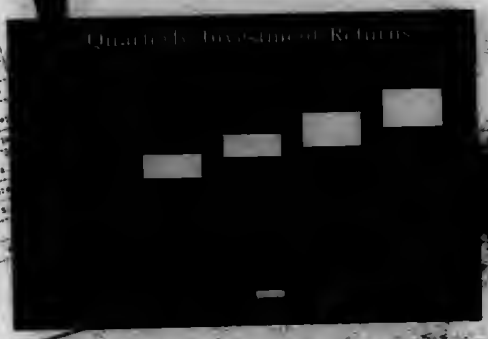

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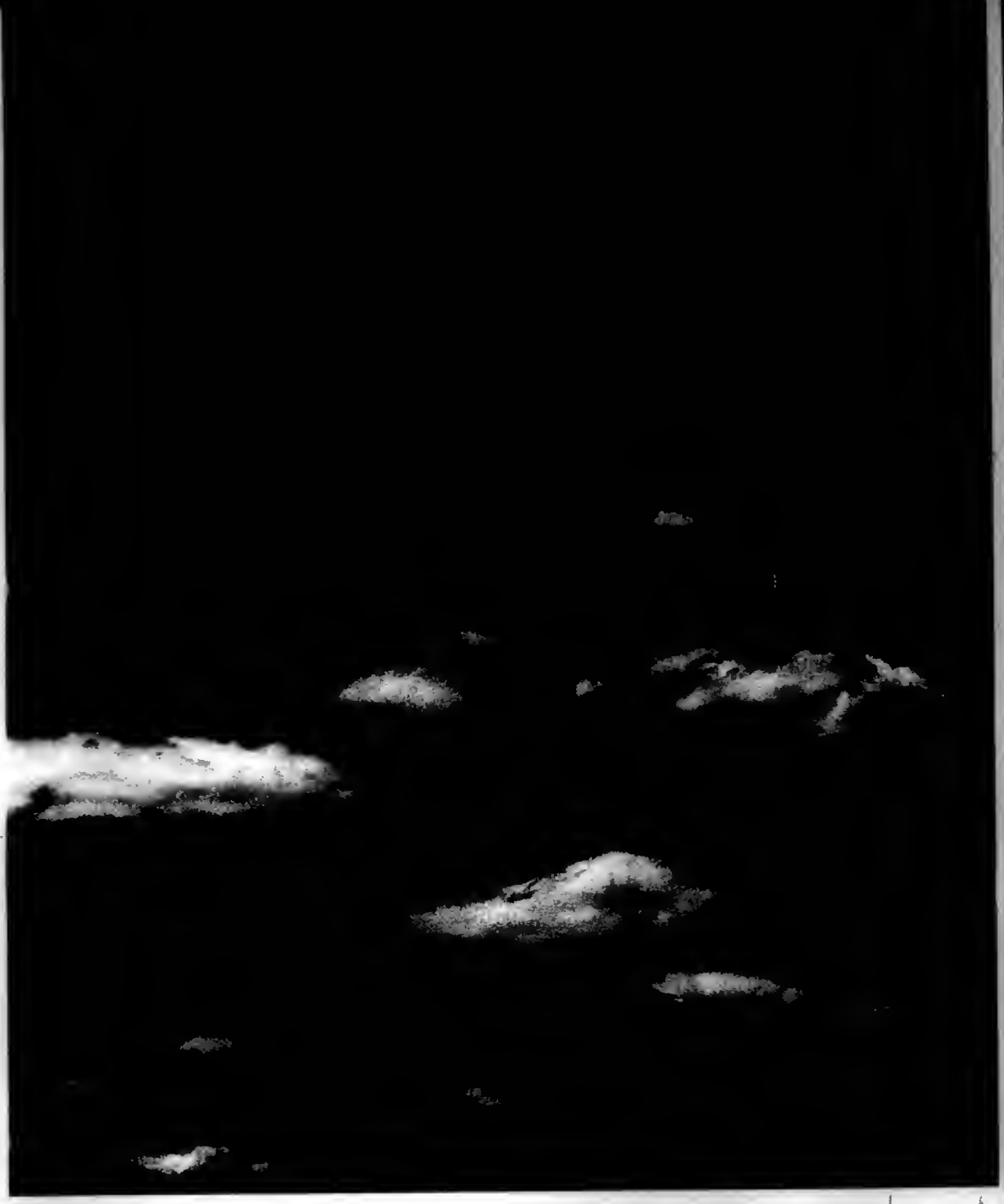

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MCI discount aimed at FTS-2000 plan

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — MCI Communications Corp., the losing bidder for the federal government's private voice/data network, tried to lure agencies away from prime contractors AT&T and U.S. Sprint Communications Co. last week with the promise of discounts of up to 40%.

However, the U.S. Congress has required federal agencies to use the Federal Telecommunications System 2000 (FTS-2000) contract, and waivers are tough to get. The real effect of MCI's new government tariff may be to put more pressure on the incumbent vendors to lower their prices, said federal market consultant Warren H. Suss in Jenkintown, Pa.

MCI is apparently trying to capitalize on reports that some federal agencies believe the FTS-2000 dedicated transmission and data services are overpriced. According to a recent study by Information Strategies Group in Vienna, Va., agency network managers would like to send the message to Congress that either "FTS-2000 services should be the cheapest, or they shouldn't be mandatory."

AT&T and U.S. Sprint characterized the MCI tariff as the last-ditch ploy of a disappointed bidder to get some federal business. Furthermore, they said, MCI's tariff is not really cheaper than FTS-2000 rates, and it includes fewer services. The U.S. General Services Administration, which administers the FTS-2000 contract, is studying the MCI tariff and had no immediate comment, a spokesman said.

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Crash blamed on old system

BY J. A. SAVAGE
CW STAFF

LOS ANGELES — Los Angeles International Airport (LAX), the site of a recent fatal runway crash, is scheduled to install a new computerized ground radar system in April. Air traffic controllers on duty when the US Air and Skywest planes collided Feb. 1 were relying on an almost 20-year-old system that was unusable that night.

"It's easier to count how many times the radar works on one hand than how many times it's out," said Karl Grundmann, safety committee chairman for the National Air Traffic Controllers Association Western Pacific Region.

Grundmann said the LAX radar antenna was working at the time of the crash, but the information on the airplanes was not getting to controllers because the scope was out.

This is despite claims by a Federal Aviation Administration (FAA) spokesman that it has been working constantly since 1972.

Unusual system

According to an FAA spokesman, LAX has an unusual radar system, a "one-of-a-kind" built by Texas Instruments, Inc., which did not manufacture the scope.

Other airports have an Airport Surface Detection Equipment (ASDE) system from Norden Systems United Technology, Inc. in Melville, N.Y.

In its National Airspace Systems plan to upgrade airways technology, the FAA has included a newer version of the surface detection equipment called ASDE 3. This equipment was supposed to be installed at the first site in 1989, according to the U.S. General Accounting Office. However, it is only now being installed at the first site in Pittsburgh.

ASDE 3 is based on an Intel Corp. 80286 CPU that digitizes transmissions from the antenna, processes the information and sends to displays in the control tower, according to Peter Foley, manager of radar and combat systems at Norden.

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TECH TALK

Password protection

■ Baseline Software in Sausalito, Calif., recently declared that it has developed a cure for the security woes plaguing the computer industry. The company said it has developed a software package called Password Coach that prevents unauthorized access to IBM Application System/400 computers. It is the only software on the market that screens passwords selected by users to make sure they are difficult to crack, the company said.

Light work in Iowa

■ Researchers at the University of Iowa in Iowa City have received patents for three devices that could be used as building blocks in an optical computer. Optical computers use light beams instead of electronic components and can operate 100,000 times faster than electronic switches, said Robert Cuykendall, one of the researchers. The patents were awarded for an optical switching device that routes energy impulses, a multiplexing interface to the switch and a device that keeps laser beams from spreading out and becoming too dim. While computer engineers are likely to begin building conventional computers that incorporate some optical components, it will probably be 10 years before the first all-optical computers are introduced, Cuykendall said.

Read up on Unix

■ Highland Software, Inc. in Palo Alto, Calif., said it plans to market a "software store" on compact disc/read-only memory (CD-ROM) discs that contain collections of Unix application software packages and demonstration programs. The CD-ROMs run on Digital Equipment Corp., Sun Microsystems, Inc. and Hewlett-Packard Co. workstations and are sent to users who request them. Programs on the CD-ROMs can be evaluated and purchased after receiving a password from a participating independent software vendor.

Pentagon funds peacetime projects

San Diego firm uses military funds for projects that will benefit nonwar uses

BY MICHAEL ALEXANDER
CW STAFF

Since the war in the Persian Gulf started, many news reports have focused on the computerized weaponry that is being used to wage this "high-tech war."

Television news viewers watch videos taken from the nose cones of "smart bombs" homing in on strategic sites and hear from experts about how tanks use "smart weapon" systems to lock in on distant targets, even as the tanks are rolling over undulating terrain.

Is that all the U.S. has to show for its technological ability — high-tech weaponry that is designed to be more lethal than ever before? Not by a long shot, fortunately. These days, much of the research that is being funded by the Pentagon can also be used for peaceful purposes.

For example, HNC, Inc., a neural networking applications developer based in San Diego, Calif., is working on three military-funded projects: a target-recognition system, a speaker-independent continuous speech recognition system and an analog neural network controller chip.

"The target recognition system is really something much more useful than just that," said David Shlager, vice president of sales and marketing at HNC. "It is as important for commercial airlines. The training of the neural network is for identification of a military target, but it could just as easily be a DC-10 or 747." The identical technology is already being used by a Japanese firm to sort good and bad apples, Shlager said.

The company was launched with and continues to operate largely on government funding, but "we have never done a project unless there is a commercial backside to it," Shlager added. "The military market is limited because it is very specialized."

Military not emphasized

The Strategic Computing Program, probably the most significant Defense Advanced Research Projects Agency (DARPA)-sponsored computer research project, is tied to military applications, but the majority of the program's technology base is basic research in fundamental computer science. Only 20% of the program's budget is slated for military-related technical applications, such as the autonomous land vehicles and smart weapons, according to the Project on Funding Policy in Computer Science, part of the Association for Computing Machinery's Special Interest Group on Automata and Computability Theory.

David Sarnoff Research Center, Sun Microsystems, Inc. and Texas Instruments, Inc. are developing a multimedia workstation that will allow the display of multiple video, static image, computer graphics and text windows on one high-resolution screen under a $7.7 million contract from DARPA.

The workstations are destined to be used as platforms for communications command and control and intelligence analysis. They will also be used to develop algorithms and techniques for smart weapons and night vision.

Cyndy Patrick

The workstations will also be useful for such commercial applications as desktop teleconferencing, electronic video mail, medical imaging and broadcasting, researchers said.

Scientists at Calspan-UB Research Center, a joint effort involving the State University of New York at Buffalo and Calspan Corp., developed an "intelligent multimedia interface" under a $500,000 contract from DARPA.

The goal of the project was to develop an interface that would make communications between humans and computers easier and more natural, using speech, gestures, graphics, text, tables and maps, said Stuart Shapiro, chairman of the University of Buffalo department of computer science and one of the project's two principal scientists.

A military strategist would use such a system to plan missions and assess the counteroffensive abilities of an opponent, Shapiro said. By verbally querying the computer and simply pointing at a map, the strategist could delve into a database to retrieve information about missile sites, for example.

The same system could also be used by a city planner exploring various options for redistricting, Shapiro said. "He could talk to the screen the same way he might talk to a person with a map in front of you — you point at the map to highlight things, and the map talks back."

U.S. Air Force researchers at the Biocommunications Laboritories at Wright-Patterson Air Force Base outside Dayton, Ohio, are working on a three-dimensional sound system for fighter pilots. In conventional stereo audio equipment, the sound appears to emanate from the right and left or somewhere in between. The 3-D sound system would enable a listener to localize a sound behind, above or elsewhere in a space while wearing a pair of headphones.

"There are two areas that a 3-D sound system would help pilots," said Mark Ericson, an electronics engineer who pioneered the concept along with Rich McKinley, a senior engineer. "One is target recognition when trying to avoid an incoming missile or to aim a missile," Ericson said. "The pilot wouldn't have to look at a display — he could hear the missile coming. The other is to separate communications in space. Right now, all communications channels are coming through a single headset. If more than one channel comes in at a time, it garbles the sound."

A 3-D sound system would enable a pilot to localize the channels so that communications from a wing man flying behind and to the right would appear to be coming from that direction inside the headphones, Ericson explained.

The same technology could be used by commercial pilots. Less obvious is the idea that 3-D sound technology could be used in a unique navigation system that would assist the visually impaired in traversing city streets. A series of beeps would guide a person from one location to another, Ericson said. The system could also be used to make home audio systems sound more realistic.

Sixty percent of the $21 billion spent by the nation's top federal laboratories is for defense applications; the rest is for basic research, according to the Office of Technology Assessment. Much of the work being carried out by national labs has civilian applications, according to Gerold Yonas, director of laboratory development at Sandia National Laboratories.

For example, more than 300 companies, including computer and automobile manufacturers, are using software for 3-D structural analysis that was developed at Lawrence Livermore National Laboratory for weapons systems research.

Some experts are skeptical that technology developed for military applications is filtering through to the civilian side, however. There have been few notable successes that have come from military technology, they said.

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EDITORIAL

Losing the lease

FOR SEVERAL YEARS there existed a rather uneasy truce between IBM and its largest (collective) mainframe customer — the computer dealers and lessors. The lessors were basically content with the arrangement, especially when IBM began to de-emphasize writing its own mainframe leases in the early 1980s in the favor of outright sales. And sales to the lessors still counted as sales for IBM.

Then the elephant began to roll over just a bit and created its own leasing entity, IBM Credit Corp. (ICC), a subsidiary that buys big boxes from the parent company and then arranges great leasing deals. Being very well capitalized, ICC has seldom had trouble competing with the lessors, many of which have fallen on hard times.

In fact, last year the court-appointed trustee of one bankrupt lessor accused (but did not name names) some lessors of generally unethical practices. Many observers felt lessors were being driven to such practices because of the competitive heat radiating from ICC.

Now ICC has sued Comdisco, the second largest lessor, for allegedly doing "chop-shop" work on ICC's computers. IBM says it wants the courts to clarify the terms of ownership of the computers it leases. The lessors, as well as many who follow the multibillion dollar leasing industry, call it war on lessors.

So much for an uneasy truce.

The odds are IBM will get a favorable judgment. It picks its legal battles carefully and sparingly. Can you recall a case initiated by IBM that it lost? We can't either. The lessors know this, and that's why they are not sleeping well these days.

The ramifications for customers are potentially great. An active third-party leasing industry is not only a viable means of price control via competition: It also represents an entity other than IBM to control the stockable mainframes. If this control is not dispersed, it could be a weapon in the hands of IBM when it seeks to push a new generation of mainframes, and that's not necessarily good for you.

This is the worst-case scenario envisioned by ICC critics and one that is unlikely to occur if for no reason other than the lessors do represent a sort of extension of the IBM sales force.

But any blow to a struggling third party, particularly when IBM takes aim at the biggest independent lessor, can be powerful in times of recession and in times of flat mainframe sales in the U.S.

For its part, IBM's credit unit insists there is no hidden agenda; it simply doesn't want the people reconfiguring its machines. It added more punch to that line when it sued two mainframe storage makers 10 days ago with similar chop-shop charges.

Nonetheless, customers need to be wary of these developments. Any blows to competition are ultimately blows to them as well.

LETTERS TO THE EDITOR

Fighting spirit

Praise and accolades to Mr. T. J. Rodgers at Cypress Semiconductor on his perceptive and well-written viewpoint [CW, Jan. 14].

As president of a tiny, entrepreneurial firm, I too am engaged in frivolous "patent" litigation, which was brought against my firm solely to prevent competition and innovation.

Indeed, when the courts start imposing sanctions and actually start punishing these corporations and individuals, then and only then can the U.S. expect to begin to regain the edge over the international competition that only the American entrepreneurial spirit can provide.

When will the U.S. wake up and once again support the basic element of our democracy and economy — the entrepreneurial spirit? How long must the large megacorporations be the driving elements of the U.S. economy, business attitudes and, ultimately, our way of life, especially in light of the situations we are all seeing.

Charles F. V. Rogers
President
CFR Associates, Inc.
Haverhill, Mass.

Big Blue bully

As a 36-year veteran service technican, 21 of those years with IBM and the remaining being a competitor of that company, I was shocked but not surprised at the legal attack on Comdisco by IBM [CW, Jan. 28]

How can IBM demand the return of a system as leased with all original parts as leased? They sell features and take all the removed parts when they install the feature. The maintenance philosophy calls for the replacement of up to five major parts when a malfunction occurs. IBM will even replace entire frames or systems to correct a failure. (So will competitive service companies.)

Does IBM intend to demand that these third-party service companies replace all service-replaced parts with the original ones and then still pass the operational requirements?

Will IBM comply with this rule themselves? IBM will do everything it can to disparage competition because no one has enough money to fight them in court, not even Uncle Sam.

This is just another legal attack on a competitor by our local Big Bully.

Every leased box returned to IBM must pass IBM's inspection and operational verification, in most cases, at additional expense to the lessor or third-party service company.

Remember, IBM does not want all the business in the world, just yours and mine. They only want 100% profit, also.

James E. Beistle
St. Joe, Ark.

Power struggle

Vicki McConnell and Karl Koch's "Misuse of Power" [CW, Jan. 28] states that new technology implementations often fail because executives have mismanaged the relationship between technology and the business users. This is half the problem. The other half of the problem is the need for information systems professionals to be more forward-thinking in applying the correct technology to their companies. There is no such thing as a bad technology; there are only bad technological fits within companies.

Many of the market and operational achievements in business over the last 10 years were made possible through technological advances. But in order to continue this trend, IS managers need to look where "correct fitting" technology will be and not where it is. Interestingly, when hockey great Wayne Gretzky was asked what made him a better player than others, his response was, "I go to where the puck will be and not where it is."

For companies to stay competitive in the future, IS managers and corporate executives need to keep an eye out for innovations in technology that could revolutionize some part — however small — of the business. It is a task that the entire organization needs to understand and address. New technology implementations in corporations have been filled with problems and leaps of progress. Nonetheless, "correct fitting" technology continues to reshape business. Companies that refuse appropriate new technology may find themselves left behind by their competitors in the future.

Eric D. Goldfarb
Manager of Information Systems
Lintax-Ceco Communications
Warren, Mich.

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Purging information overload

The time has arrived for a new form of conservation: data ecology

MARK HALL

We no longer have information access but rather information excess and a massive pollution problem in the making. The landfills of our minds are brimming beyond capacity. If something is not done soon, we will need a Superfund of the intellect to clean up the muck in each of our heads.

Every other major industry is responding to environmental concerns. The soft drink industry has joined in efforts to recycle plastic bottles. Fast-food providers are eliminating the egregious use of offensive packaging. The painful exception to this spreading awareness of the need for conservation is the information industry.

Information is manufactured at dizzying rates in all corners of the globe. There are no controls on it. No restrictions. Oh, some might say that information is restricted in China or South Africa. Not so. Information is plentiful in those countries. It's truth that is in short supply. Propaganda contributes to the information glut as much as a 350-page printout for accounts payable.

There is no escaping the intrusion of information in our lives. The *New York Times*, *USA Today* and *The Wall Street Journal* are now delivered, along with the local paper, to doorsteps in Dubuque, Iowa.

And that's not the worst of it. *Time* magazine's a recent cover story on junk mail observed that the billions of tons of unrequested gaudy paper Americans receive each year is considered information by some misguided individuals.

It's everywhere

Of course, if "a picture is worth a thousand words," television is the googolplex of information pollution. As our globe-trotting former president, Jimmy Carter, recently noted with questionable pride, no mattter what remote Third World locale he wanders in, no matter how poor or how distant, his fellow Georgian, Ted Turner, beams down 24-hour-per-day information through CNN.

George Bush promised to be our "environmental president." On the information issue, however, he has failed miserably. For a time he held firm, recycling one phrase — "read my lips" — over and over. When pressed on the issue of taxes while jogging, he altered only one letter: "Read my hips." This restraint nobly showed his information environmentalism. And while he held to it, he had the support of his party and electorate. But when he went on television and tried to explain at length why he had changed his mind, his support collapsed.

Information pollution can not only damage politicians, but it can also wreck the economy. The savings and loan fiasco has been around for years. Suddenly, we know about it, and it's a crisis that will not go away.

To avert a catastrophic information-overload crisis, voluntary restraint is necessary. Otherwise, just as the public suddenly came to demand less pollution in its air, water and earth, there will be a draconian backlash against the information rubbish that is dumped into our heads.

Information systems managers are clearly not the only, or even necessarily the worst, culprits, but they will suffer much of the backlash. IS departments are likely to become battlegrounds for the new age of information ecology. Why? Because the very term "data processing" reeks of information excess: reports, forms, input and output.

It is inevitable that IS managers will be portrayed as information wastrels who are unable to hold back the flow of data muck. Clarion calls for a new cabinet-level information secretary will he heard.

James Katsaras

To get ahead of this reactionary wave, the information industry must take the road of self-restraint.

This will have to be a many-pronged effort. In book publishing, for example, thick volumes of questionable and redundant information ought to be forsworn. Instead of producing twenty-odd competing dictionaries, maybe Random House, Webster's, Oxford and American Heritage could put their heads together and produce one book that does the job right.

Like publishers, IS professionals must unearth new ways to bury data. Eliminating report redundancy is a good start, but eliminating whole reports would be even better. (You've always doubted whether your clients actually read them anyway.)

If self-control isn't enough to do the whole job, federal funding can be earmarked to help IS professionals relinquish their information dependency. Like some farmers, programmers can be paid to let their code go fallow. And people who request new reports can be quietly whisked into rehabilitation clinics for info addicts.

It behooves the information industry to act now. Before the boycotts. Before the marches and the protests. Before "ignorance is bliss" becomes a major political issue.

Hall is an executive editor at Springer-Verlag, a technical publisher in Santa Barbara, Calif., and co-author of Sunburst, a book on Sun Microsystems, Inc. published by Contemporary Books.

Technology offers disabled a chance to make their mark

GLENN RIFKIN

The disabled have long suffered from a handicap much more disabling than their physical difficulties. Discrimination, both in and out of the workplace, has been so rampant that last summer, President Bush signed into law the Americans With Disabilities Act, the first civil rights legislation since 1964, which makes it illegal to discriminate against the disabled.

It is sad but not surprising that legislation had to be passed to change stupid, archaic practices and hopefully some attitudes along the way. Because the fact is that something dramatic is happening for people with disabilities that is making many forms of physical impairment irrelevant.

That something is technology. Computers, along with amazing software and other adaptive high-technology devices, are allowing the disabled to change their lives. Technology is effectively erasing many handicaps, such as visual or speech impairment, motor dysfunction and even certain mental disabilities.

Researchers at IBM, Digital Equipment Corp., Kurzweil Applied Intelligence and dozens of other companies continue to make breakthroughs in adaptive technology. Centers around the country, such as the Trace Research and Development Center in Wisconsin and the Communications Enhancement Center at Children's Hospital in Boston, have brought users together with developers to shape and direct the work.

Dr. Howard Shane, director of the Communications Enhancement Center at Children's Hospital, a longtime prime mover in the field of adaptive technology, says these efforts are starting to bear fruit. "People who haven't worked in 10 or 15 years are suddenly finding that they can now work because of technology advances," he says.

Filling a need

The people who have pioneered this technology should certainly be lauded for their noble contributions, but the net effect of such efforts goes far beyond altruism. The plain numeric fact is that our work force is shrinking as the baby boom blip moves along toward age 40 and beyond. There are simply not going to be enough workers to handle all the necessary jobs. That issue may seem distant in the midst of the current recession, but economic cycles change relatively quickly — demographics don't.

Think about it this way: 43 million Americans suffer from a physical or mental disability — 43 million! That is about one out of every six people in this country. That makes people with disabilities the largest minority in the U.S.

Then think about this: According to the U.S. Census Bureau, only 28% of working-age people with disabilities hold full- or part-time jobs. According to Erica Jones, acting director of public affairs for the President's Committee on Employment of People with Disabilities, a vast majority of the remaining 72% "are ready and willing to work if given access to the work force."

This is where technology comes in. Technology provides access. Technology is the great equalizer, helping to neutralize the disability and allowing the person to participate. Alex Lome is a perfect example.

A truck accident eight years ago left Lome with a degenerative nerve condition in his hands. Lome, a Chicago-based writer, faced the possibility of never working again. In April of last year, he discovered, after much research, a voice-recognition system created by Dragon Systems in Newton, Mass. The innovative technology allows a user to read into a microphone and have the words appear instantly on a computer screen.

With the help of some grant money, Lome was able to get set up with the Dragon system and a personal computer. "I can blast along at 60 words per minute with 95% accuracy," he says. "This technology gave my life back to me."

With the advent of the information age, white-collar knowledge workers are and will-be in demand. And someone with access to a computer, a telephone and a modem can perform an ever-widening array of jobs. Suddenly, people with disabilities become a very attractive and vast resource pool from which to draw talent. Corporations, rather than being forced by legislation, should be embracing this resource now so that the issue quickly becomes a nonissue.

It costs relatively little for an employer to provide adaptive technology to a worker with a disability — the President's Committee on Employment of People with Disabilities estimates the average cost of accommodating such an employee to be less than $1,000. Even if it is ten times that amount, the net result is more than worth the cost: It takes someone off relief and gives them a productive life, and it gives the employer a dedicated, loyal employee. This is a trade-off that should spur faster and better development of affordable adaptive tools. There's really no choice anymore.

Rifkin is a free-lance writer and a former *Computerworld* features editor.

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More change needed at D&B

VAX users say customer service at the firm still leaves much to be desired

ANALYSIS

BY SALLY CUSACK
CW STAFF

FRAMINGHAM, Mass. — When McCormack & Dodge announced its first Millennium accounting product for the Digital Equipment Corp. VAX environment in the summer of 1988, users had no forewarning that the vendor was heading for major changes: a merger, a name change and several divisional restructurings.

Rechristened Dun & Bradstreet Software last year, after being merged with Management Science America, Inc., the company is still aligning products and services. A year and a half after the fallout, the products themselves are getting good marks; however, users have raised questions about customer service under D&B Software.

Keith Mcleod, a senior systems analyst at Perrier Group of America, Inc., uses the Millennium, general-ledger and fixed-assets packages on a DEC VAX/VMS 6340 system that supports approximately 100 users. The company is in the process of bringing up the accounts-payable system.

All in all, Mcleod said, the products are good. He is especially pleased with the general ledger on-line query functions and the report capabilities.

However, Mcleod added, service and support from the software vendor have gone from "good to less than good" since the merger. Seldom does he get to speak to someone on the first call, Mcleod said — something that never happened under the McCormack & Dodge flag.

Pleased with performance

Rick Banning, a business analyst at Maryland Bank National Accounts America (MBNA) in Newark, Del., has been using the general-ledger, fixed-assets and accounts-payable Millennium packages on a DEC VAX 6310 and is basically pleased with the software's performance. Banning described the installation process as "smooth." MBNA brought in consultants for the installation process, and the company has customized several of the D&B Software utilities.

While Banning said the actual vendor merger was virtually transparent to him, he concurred with Mcleod that D&B Software's service and support could use some fine-tuning, observing that the department seems understaffed.

According to John B. Koles, vice president of the Digital Business Unit at D&B Software, customers may still be adjusting to D&B Software's new automated service system, installed approximately four months ago, which logs and prioritizes every call.

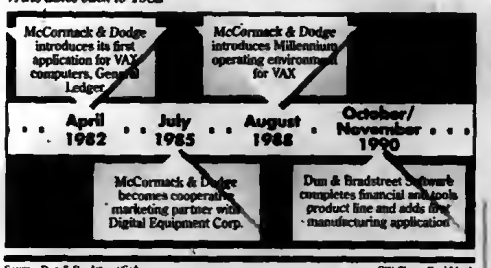
"The intent is to increase the personal touch by guaranteeing that we don't lose a call," Koles said, adding that the company has doubled staff numbers for DEC customers in the central support area alone during the past year.

Some users reported that they have been getting better service since the merger. Doyle

Continued on page 33

VAX timeline

Dun & Bradstreet Software's product line for Digital Equipment Corp. VAXs dates back to 1982



Source: Dun & Bradstreet Software — CW Chart: Paul Mock

Levi's multiprocessor upgrade a snap

BY J. A. SAVAGE
CW STAFF

SAN FRANCISCO — Jeans maker Levi Strauss & Co. buttoned up the slot as the first user of a Hewlett-Packard Co. multiprocessor minicomputer. The firm is currently using the system for software development at its headquarters but will ship it in six months to its CPU-strapped operations in Brussels.

"We thought going into it that we were taking a bit of a risk," said Stephen Levandowski, vice president of information resources. "But it was pretty easy." The dual-processor machine, an HP 3000 Series 980, was installed in late December.

Levandowski was able to upgrade to the multiprocessor system on the fly, leaving his contingency plans on the drawing board. The computer, based on HP's proprietary operating system, took a two-hour, two-board swap. "In a worst-case scenario, it would have been out for two days," he said.

Zipping along in Europe

The scalability of HP's minicomputer line is expected to work well for the company's European operations. Unlike the U.S. market, which has "maxed out" on jeans, a Levi's spokeswoman said, the European market is "blossoming." Basic blue jeans in Eastern Europe sell for the equivalent of $100.

During the six-month break-in period before the new multiprocessor is shipped to Brussels, Levis will use it for software development for projects such as the company's private Advanced Business Systems, which includes sales and distribution, production planning, financial management and customer service. The software developed for the HP platform is used only in non-U.S. markets.

U.S. operations will remain on Levi's IBM mainframes, Levandowski said. An HP 3000 Series 960 now residing in Brussels will be shipped to San Francisco for continued software development.

Firm ships reusable code software for CASE market

BY ROSEMARY HAMILTON
CW STAFF

ARLINGTON, Va. — Software Architecture and Engineering, Inc. recently began shipping a reusable code package for the computer-aided software engineering market.

The company is targeting its template, which consists of 225,000 lines of C code, at Unix workstation environments. Called the Strategic Networked Application Platform, the product was designed for networked applications.

"I think they are on the right track in that reusability is going to be a real kick for users," said Ed Acly, an analyst at Technology Investment Strategies Corp., a market research firm based in Framingham, Mass. "They seem to be targeting it more for real-time [applications] rather than typical MIS."

Ahead of the game

The idea is to provide users with a jump start at programming, the firm said. The template, which carries an entry-level license fee of $28,000, consists of five generic modules required for typical workstation applications.

These modules include links to networks, links to relational database management systems, a graphical user interface, an expert system shell and an object-oriented data model.

A user is required to tailor the template to the specific application. The company claimed that this process accounts for approximately 10% of the total application's code.

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Cognos extends AS/400 support for Powerhouse

BY MARYFRAN JOHNSON
CW STAFF

BURLINGTON, Mass. — Seeking a foothold on unfamiliar terrain, Cognos, Inc. extended its suite of Powerhouse application development tools on the IBM Application System/400 platform last week.

This is the second phase of Cognos' rollout of fourth-generation language (4GL) tools for the AS/400. Powerhouse is well-established on midrange computers from Digital Equipment Corp., Hewlett-Packard Co. and Data General Corp., analysts noted, and it runs on MS-DOS and IBM OS/2 platforms.

"Nobody's really heard of them in the midrange," said Teresa Elms, president of Elms Technical Communications, a market research firm for the IBM midrange. "But bringing another major player in is always good for end users."

The major hurdle Cognos will face with AS/400 users is that Powerhouse is a 4GL based on the C language, which has a reputation for poor performance on the AS/400. The company will also face stiff competition from Synon, Inc., System Software Associates, Inc. and Aspect, Inc., which dominate the IBM midrange with third-generation language code generators and computer-aided software engineering (CASE) tools.

Andre Boisvert, Cognos' vice president of IBM operations, said the Powerhouse products will ease the job of coding and maintenance, which helps reduce costs for information systems shops. Multivendor shops already familiar with Cognos are most likely to give Powerhouse its initial welcome, analysts said.

One of those first users is Norbert Tauchner, director of corporate information systems at Dominion Textile, Inc. in Montreal. The world's largest producer of denim, Dominion has a mix of IBM and DEC midrange machines at 32 locations worldwide plus other systems from Wang Laboratories, Inc., HP and DG.

"We are looking for something to unify the strategy for those 32 locations, so we've tried to pick a hardware platform and applications environment we could live with across all those sites," Tauchner said.

The ability to generate 4GL code was the chief attraction of Powerhouse over competitors such as Synon, which generates 3GL code for RPG or Cobol. "Generating third-generation code is kind of a belt and suspenders approach," Tauchner said.

Different direction

The direction the textile manufacturer is taking instead is toward a client/server computing architecture based on DEC and IBM with applications developed in Powerhouse 4GL.

"Powerhouse makes us almost hardware independent because if the best machine to use is a PC, we can develop applications on that with Powerhouse," Tauchner said. "The real issue is whether the Cognos product will be as good on the AS/400 as it has been on its other platforms."

Cognos released the first phase of Powerhouse for the AS/400 last May with a report writer, dictionary and conversion utility. This second phase fills in several missing 4GL pieces, including a full data dictionary and a conversion utility from the IBM System/36 RPG code to Powerhouse. It is priced from $11,000 to $76,000 for a development license and is available immediately.

Still missing are CASE, documentation and maintenance tools, which Cognos officials said will be added later this year.

Cognos officials stressed that all Powerhouse tools on the AS/400 will be fully compliant with IBM's AD/Cycle and Systems Application Architecture.

Cosmos²: Fedex's next generation

ON SITE

BY JOANIE M. WEXLER
CW STAFF

MEMPHIS — To keep the upper hand in absolutely, positively delivering packages overnight, Federal Express Corp. is taking its Cosmos II tracking system into the world of Unix, distributed computing and relational database management systems.

Cosmos², the next generation of the courier's worldwide tracking system, is a 3½-year project that represents a 100-person effort to build a new infrastructure for the industry-revered system.

"Most people say we have the finest tracking system in the world," commented Ron Ponder, Fedex's chief information officer. "But we want to continually add value to the customer — particularly as competitors catch up to our current-generation technology."

The pioneer in on-call, overnight delivery service said it now processes 14 million on-line transactions per day. The transactions are tracked by an IBM IMS database running on IBM and Amdahl Corp. equipment in communication with a Tandem Computers, Inc. system in the firm's Memphis headquarters, Digital Equipment Corp. minicomputers in dispatch stations and Fedex's own Supertracker handheld scanners and Digital Access Dispatch System computers in delivery vans.

The firm is aiming for systems integration "that brings us into three arenas: totally relational databases, very distributed computing and technology to automate our routing and sorting process," Ponder said.

That infrastructure will include adding a relational database component to the firm's technology mix.

RDBMSs allow dynamic views of relationships between data rather than confining users to preset relationships. The IMS database will remain in place for transaction processing and backup because its nonrelational nature gives it a leg up on performance.

In addition, mainframe software development is under way to allow the company to increase the throughput between communicating systems and the system processing time fourfold to fivefold. "This will ensure that as we handle greater volumes of transactions, the systems won't falter," Ponder said.

New additions

Technology changes at Fedex will also include the addition of a distributed, peer-to-peer computing environment with the installation of Unix-based platforms in the dispatch stations. Ponder said he is running two Unix prototypes on different vendors' hardware. The aim is to offload some of the transaction processing from the mainframes and to place more information closer to the station personnel. Currently, the stations' minicomputers are used only for dispatching.

"It makes for more sensible operations if you push out to each dispatch station the data it needs to manage and allow the stations to access just the data they need," as opposed to locating data only in central mainframe-based repositories, Ponder said.

The purported openness of the Unix operating system is also important to Fedex "so we can take advantage of different vendors' breakthroughs in cost-performance over the next several years," Ponder said.

One Cosmos² component will kick off this summer with the installation of Courier Printers in every Fedex van. The printers were designed in-house to issue a "very smart" label for each package.

The labels will link with another Cosmos² component — software dubbed Astra — that will reside in the Supertracker to help route and sort packages "so not one of them ever goes astray," Ponder said.

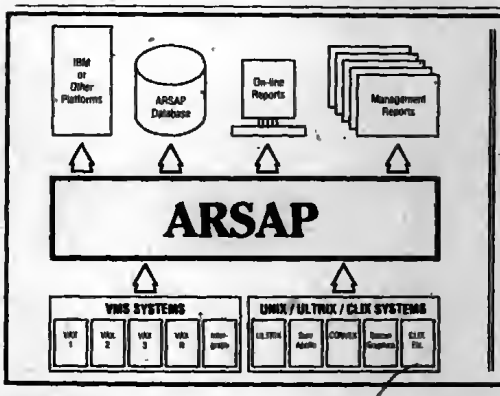
He added that when Astra is in place and sorters scan a package with a smart label on it, the Supertracker will beep if a package is placed in a wrong container.

"Cosmos² will allow us to anticipate problems before they happen," Ponder said.

Cosmos II — which won a 1990 *Computerworld* Smithsonian Award for innovative technology [CW, July 2, 1990] — outmoded its "reactive" Cosmos predecessor in 1985 by becoming a real-time system. This happened with the firm's invention of the menu-driven Supertracker bar-code scanner.

Federal Express' Ponder *heads up 'the finest tracking system in the world'*

Worldwide, there are currently 60,000 Supertrackers scanning packages every time a shipment changes hands. The Supertrackers relay data back to the minicomputers in the dispatch station through a coupler on the Digital Access Dispatch System in each van. At the end of each business day, the Supertracker is stored in a mechanical cradle in the dispatch station where its information is downloaded to the mainframe, allowing the database to be updated automatically during the night.



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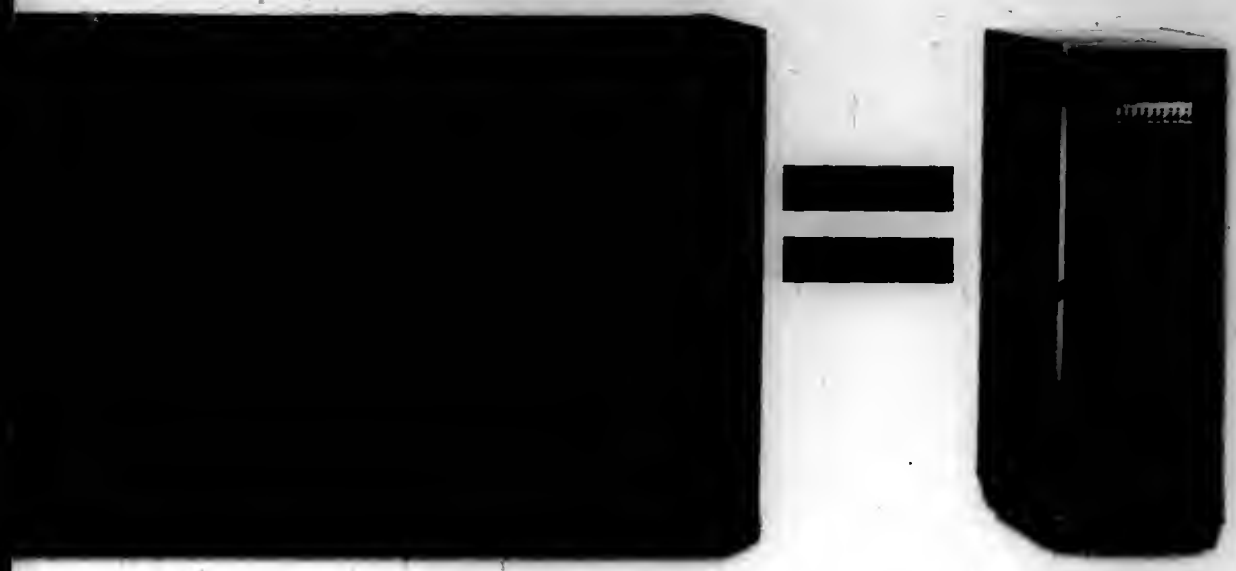

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EMC²

State program chooses minis over PCs

ON SITE

BY SALLY CUSACK
CW STAFF

LITTLE ROCK, Ark. — Good food equals good health, and the federal government's Special Supplemental Food Program for Women, Infants and Children (WIC) hopes to ensure the good health of the four million people it currently serves.

WIC provides nutritional food to pregnant women, nursing mothers and children up to age five. The Arkansas Department of Health decided to automate its statewide WIC program in 1989 and chose a Wang Laboratories, Inc. VS mincomputer environment to link its 111 clinics.

Jerry Perkins, director of data processing at the state's Department of Health, gave several reasons for choosing a proprietary distributed mini-environment over the increasingly popular personal computer-based local-area network and Unix platforms.

ARKANSAS

"We have been a Wang shop since 1983, so it was somewhat of a natural evolution to use it in the field," Perkins said. "However, we also develop all software applications in-house, so the way I see it, we really have no need for Unix. If we have to modify software, we do it one time only from headquarters, giving us centralized control of software upgrades and subsequently less room for errors."

The software, which was developed in Cobol 85 and executes queries in a Wang Pace database environment, monitors applicants, recipients and vendor participants — in this case, individual grocers — in the WIC program.

Multiple uses

All data resides centrally on a Wang VS 10000, which currently has 288 active ports. According to Perkins, the 10000 also supports software for several other applications, including state immunization records, word processing functions and emergency medical services.

The Arkansas Department of Health also has a second VS 10000, originally purchased to add imaging technology to the Vital Records Division. The department has put a temporary hold on the imaging project for financial reasons, Perkins said, but it is using the second system in the interim for health statistics, geographic information systems, health laboratory data and vital record processing.

The state agency has a VS 7310 serving as a network controller using 56K bit/sec. lines to communicate with six VS 5000 systems scattered across Arkansas. The VS 5000s, in turn, are connected to more than 100 Wang asynchronous workstations.

Perkins noted that the data processing department considered using Zenith Data Systems PCs in the field (the state of Arkansas also has a contract with Zenith), but it elected to go with the Wang 2110A asynchronous workstations based on both price considerations and ease of use.

The department has a very mobile staff, Perkins said, and it is easier to train clerks and other personnel on a single keyboard configuration. Using the Wang 2110As throughout the network gives employees a consistent hardware interface with the computer system.

Wide range

"There are 75 counties in Arkansas and roughly 100 health units," Perkins said, adding that each health unit has one WIC terminal. There are sometimes even two or three in the larger clinics, he said.

On the financial side, evaluations revealed that even with a substantial discount, purchasing PCs would have cost $1,200 to $1,300 per unit, while the Wang terminals average $730 each.

The Wang-based system has automated a traditionally paper-

U.S.A. Toronto Bruxelles Paris

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oriented process for the WIC program. In the past, WIC enrollment forms were filled out in local offices and mailed to Little Rock for data entry into the department's computer. Once eligibility was established, food vouchers were mailed to clients.

Client record information is entered directly onto the system by the field health professional, and the data is automatically updated on the central computer database. This reduces the enrollment process to about five minutes and reduces the chances of producing duplicate vouchers. Food vouchers are printed and issued at the clinic.

Mac Heird, WIC's director at Little Rock, said the WIC budget constitutes approximately 40% of Arkansas' overall health budget, which is estimated to be $40 million in 1991.

According to Heird, WIC serves almost 60,000 Arkansas women and children per month. Clients must re-establish eligibility requirements every six months by meeting income qualifications and other requirements. The typical food voucher provides supplemental items including milk, cheese, eggs, dry beans, orange juice and cereal.

Sequent beefs up power

BY J. A. SAVAGE
CW STAFF

BEAVERTON, Ore. — Sequent Computer Systems, Inc.'s Symmetry 2000 parallel processing computers, which were announced recently, will run up to 30 Intel Corp. I486 processors with a maximum performance of 354 trans./sec., the vendor claimed.

The systems, which run Unix, are aimed at the commercial marketplace. "We're going after applications reserved for big [IBM] 3090s and DEC VAXs," a spokesman said.

Analyst Tom Willmott at Aberdeen Group in Boston said Sequent might have a shot at the Unix commercial marketplace with the new systems.

Sequent's parallel processing computers use applications that break up a program to run over all available processors in order to speed processing time.

The drawback to parallelization remains the lack of software available, although Sequent has been building its portfolio. For instance, Willmott noted, a transaction monitor is needed for transaction processing, but that product has yet to hit the market.

Because Sequent has sided with Unix International for its future operating system, the company expects to use AT&T's Tuxedo monitoring product.

The new series ranges in price from $23,500 to more than $2.5 million and supports 64 to 1,000 users.

Sequent's earlier Symmetry systems, introduced in 1987, are based on Intel's 80386 microprocessors and also have a maximum configuration of 30 processors.

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D&B

FROM PAGE 27

Thompson, controller at the Texas A&M University Development Foundation, said he receives more correspondence and on-line maintenance updates than he did in the past. Thompson is running general ledger, accounts payable and D&B Software's PC Link products on a DEC VAX 6310 and characterized both the software and services as "great."

Carol Frake-Fawcett, project manager at Western Digital Corp. in Irvine, Calif., is running the financial packages in a DEC VAX clustered environment linked to international sales offices.

Frake-Fawcett said she is satisfied with D&B Software's product support and added that Western Digital is extremely pleased with the software package's ability to support multiple structures of accounts and to convert from international to U.S. currency.

According to Larry McGachey, national chairman of the D&B Software DEC Vax User Group, there are between 250 and 300 active members spanning a variety of DEC platforms.

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Second Specmark suite aimed at the high end

ANALYSIS

BY J. A. SAVAGE
CW STAFF

Workstation buyers may have noticed in the past year that vendors are marking the speed of their technical systems with a rating called Specmarks and increasingly excluding the traditional millions of instructions per second (MIPS) benchmark.

However, there are problems with Systems Performance Evaluation Cooperative Marks, or Specmarks, and they are acknowledged by everyone from users to the 23 companies within the Spec consortium. The suite of 10 applications in a Specmark was designed for single-user machines, relatively slow CPUs and architectures with small caches.

This month, Spec members began reviewing a second set of benchmark applications aimed at gauging multiuser throughput and the speed of machines in limited commercial applications. The consortium aims to have the new benchmarks out in May, according to Sivaram Chelluri, Spec project manager for the new suite and district manager for performance analysis at AT&T Data Systems in Lisle, Ill.

The current Specmark suite, called Release 1, is used primarily to measure the strength of the CPU. "It's more for when people are trying to create their 'short list' of workstations to consider," said David Chadwick, manager of benchmarking services for third-party evaluator Performance Awareness Corp. in Naperville, Ill. "The Specmark suite is quite large. It is made of applications that affect the system differently so it gives you a higher confidence level as opposed to Dhrystone MIPS — an extremely small code that fits into most caches."

After releasing the first suite of Specmarks last year, consortium members found certain strengths and weaknesses in the release, particularly its bias in favor of floating-point processing and its lack of usefulness for multiuser systems, said Kaivalya Dixit, president of Spec and an engineering program manager at Sun Microsystems, Inc.

Rapid runtime

Additionally, the newest workstations have such large caches and fast CPUs that they run Release 1 too fast, leaving users without a good look at overall system throughput. "With IBM's RISC System/6000 and Mips [Computer Systems, Inc.'s] R6000, the benchmark runs in subminutes," said Bob Novak, former Spec chairman and performance group product manager at Mips. Such a fast runtime "significantly" increases the possibility of errors, he said.

The new benchmarks, called Release 2, took up to eight hours to run on the dozens of lower end workstations set up by as many vendors in a Spec "benchathon" early this month at Intel Corp.'s Santa Clara, Calif., facility. The consortium will now run Release 2 evaluations on larger machines.

Release 2 will simulate multitasking, test I/O throughput and throughput for commercial software development, according to Chelluri. Unlike Release 1, it was designed to be scalable to larger computers. "The only numbers that will change is the amount of throughput," he said.

Reinhold Weiker, the man who published the Dhrystone benchmark in 1984, agreed. Weiker, a senior staff engineer at Siemens Nixdorf Information Systems, said that the vast difference between the number of instructions in complex instruction set computing vs. reduced instruction set computing "rules out any meaningful use of MIPS." He said Spec benchmarks are "larger and more realistic" but are still difficult to understand.

Weiker said that some vendors tuned their software compilers to run faster on the single Dhrystone test but that tuning did not provide an indication of actual speed.

In 1988, he published a second Dhrystone benchmark that eliminated the compiler advantage. He suggested that users check which Dhrystone benchmark vendors are using to eliminate such an advantage and warned that some companies, such as IBM with its RS/6000, went back to the original benchmark. "Others are following. They say they can't afford to look worse than IBM."

Graphing tool displays abstract data

BY RICHARD PASTORE
CW STAFF

Try graphing nonnumeric spreadsheet data such as "Utah," "Crystal B" or "medium-high," with most graphics tools and you are likely to get an error message. Not so with Intelligenceware, Inc.'s Database Visualization Tool (DVT). Released last month, the personal computer-based package can automatically turn even abstract concepts into two- or three-dimensional graphics.

"Not only can you visualize nonnumerical figures, but you can define concepts and give them weight," said Ronald Cook, research director at Eltron Research, Inc. in Aurora, Ill.

As part of research into new uses for methane gas, Cook is using a DVT beta-test version to graph metals vs. various catalytic chemical reactions. The goal is to discover previously unrecognized correlations between the metals and reactions from the visual depictions.

To help predict the productivity of new oil wells, nonnumeric attributes such as well location must be combined with numeric data such as well age and depth. Ultimate Resources, Inc., a Houston-based oil industry research firm, once graphed these attributes manually. Now the firm uses DVT.

"DVT doesn't do it all by itself, but it is a tremendous help toward clarifying the information," said Jim Brown, Ultimate Resources' president.

Users said DVT is the only PC product they have seen with such abstract graphing abilities. Spreadsheet graphics tools in

Continued on page 41

Intelligenceware's DVT *is able to graph nonnumeric data*

Investing in Tomorrow's Bottom Line

Jerry Barnes, Chrysler Corporation

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In the fiercely competitive auto industry, programmers at Chrysler Corporation are using Micro Focus PC-based productivity tools to cut program development time and help move products from the drawing board to the showroom floor faster.

"The bottom line is that our business needs change quickly and we want to streamline the software development process as much as possible so Information Systems can be responsive to all of our operating units," said Jerry Barnes, Chrysler's Manager of Systems Engineering Technology.

Moving application development to a workstation environment allowed Chrysler to use its mainframe resources more efficiently and speed up development cycles by taking advantage of productivity tools not available in the mainframe programming environment. With this solution, programmer productivity improves greatly without a large investment in additional mainframe resources: an important consideration in uncertain economic times.

"The mind-set here a few years ago was, 'why would anyone want to do anything away from the mainframe.' Now, we have over 200 trained COBOL/2 Workbench users."

With the Micro Focus COBOL/2 Workbench, programmers can develop and maintain full-scale CICS/VS and CICS DL/I applications independent of the mainframe in a fraction of the time.

"We quantified the time spent on typical software development activities. We showed how we could make a code change, compile the program, detect an error, correct the error and recompile the program again in less time than it would take someone to logon to the mainframe and submit the first compile. In many cases, the developer would make the change on the PC in two to three minutes, while it could take close to 20 minutes on the mainframe."

Jerry Barnes made his case for Micro Focus COBOL/2 Workbench based on greatly improved productivity. The Micro Focus edit-check-debug cycle, now an industry standard for PC-based programming made a big impact on throughput and costs.

Make the case for Micro Focus COBOL/2 Workbench in your company. Call to get your "Makecase" kit today: 800-872-6265.

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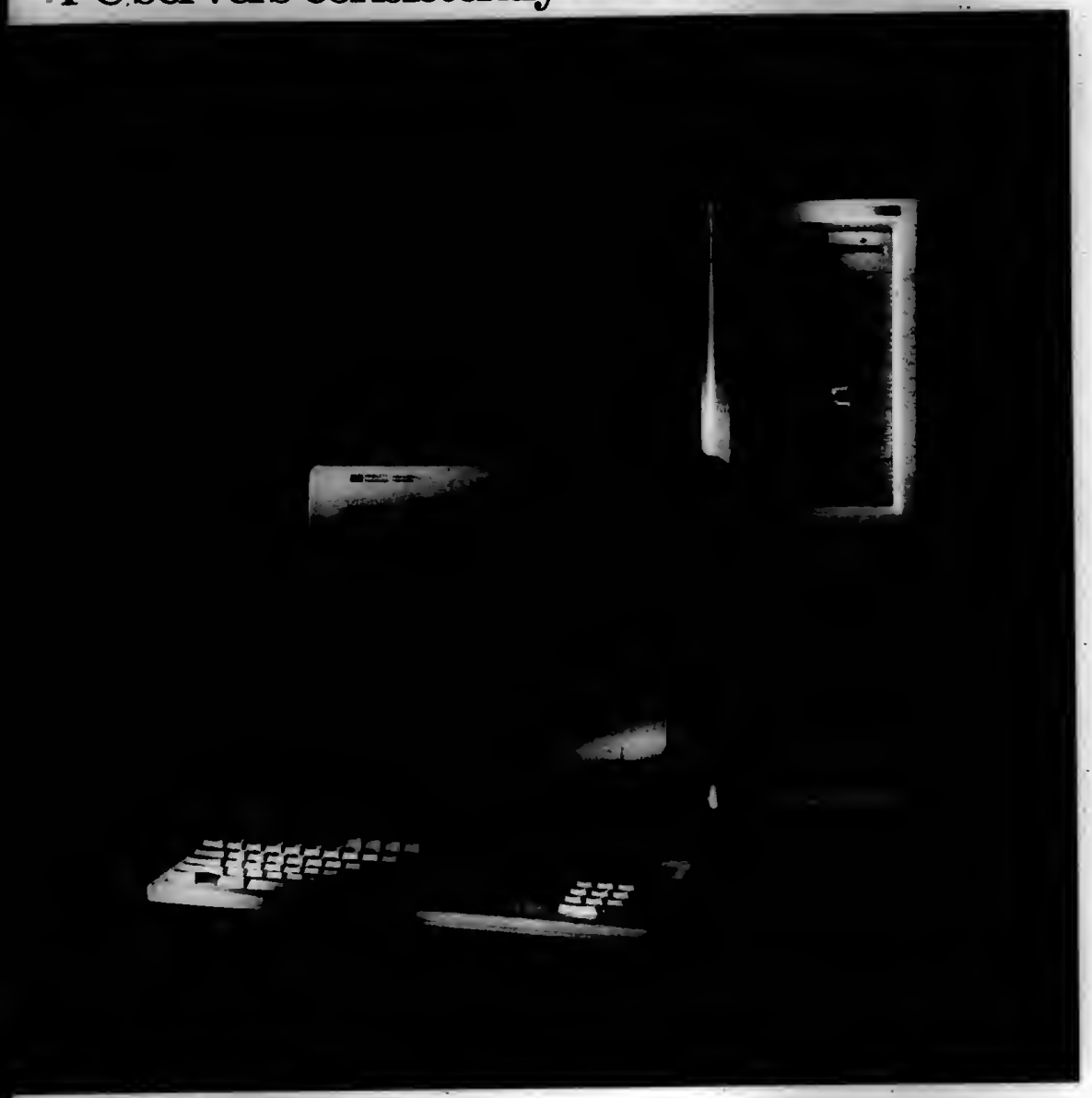

PC Magazine polled 20,000 readers! They put HP personal computers at the very top of the list for reliability. In Computerworld's Buyers' Scorecard, HP Vectra PCs rated highest in overall satisfaction[2] And the 1990 Dataquest customer satisfaction survey ranked HP #1 among major PC manufacturers[3]

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HEWLETT PACKARD

[1]PC Magazine, 9/25/90. [2]Computerworld, 11/12/90. [3]Dataquest, 10/29/90. ©1991 Hewlett-Packard Company CPPC012

Windows support service debuts

Corporate Software offers training and migration help — for a price

BY PATRICIA KEEFE
CW STAFF

CANTON, Mass. — If you cannot figure out how to open — *never mind install or migrate to* —. Microsoft Corp. Windows, then reseller Corporate Software, Inc. stands ready to help, provided you have a few bucks.

With blessings from Microsoft Chairman Bill Gates, Corporate Software has launched a package of training, support and migration services targeted at large accounts.

The services will be provided by Corporate Software's service and support organization, as well as through a partnership with Microsoft's consulting arm, Information Technology Integration Services.

According to Corporate Software Chairman Mort Rosenthal, once a decision has been made to migrate to a new platform, users face a "significant challenge" in *implementing the new standards* over a large installed base.

Pilot program

Together with Microsoft, Corporate Software launched the GUI Pilot Program designed to identify the issues associated with large-scale migrations. The six-month program involved moving more than 200 users from character-based environments to Windows at 14 companies, including Du Pont Co., The Chase Manhattan Bank NA, The Dow Chemical Co., Rockwell International Corp. and Southern California Edison Co.

Quantitative and qualitative data about end-user productivity, internal support efficiency and general acceptance of the new environment was collected. From that, Corporate Software identified key service requirements and migration strategies, the company said.

The software reseller is banking on the premise that large companies would rather contract with third parties to execute migration to Windows, instead of committing additional internal support resources.

Initial user reaction is mixed. Users who took part in the announcement were upbeat about the multifaceted program.

"The migration to Windows requires you to consider a multitude of factors," said Chic Saile, project leader at Rohm and Haas Co., who participated in a pilot test of the program. "Working with a qualified partner can better leverage a company's internal resources during the migration process."

Too expensive

Other users, such as Ron Adinolfi, a microcomputer manager at Swiss Bank Corp. who just moved and migrated 400 users to a new Windows-based office, and David Blumenstein, who heads up the Windows offshoot of the New York Personal Computer Users Group, find the services a bit expensive.

They suggested that many corporations will either rely on internal PC support staff or hire a consultant to do the legwork. Blumenstein also pointed out that there is a lot of free information available about Windows, starting with the Windows manual and "Readme" files.

"Windows has been out long enough so that if you are thinking about it, you should have been able to read enough by now and to have played with it enough to have mastered a lot of these [migration] issues," he said. Still unsure? Blumenstein recommended calling up fellow information systems executives who have installed Windows or dropping in on a local user group. The one case in which Blumenstein saw a potential for migration support is where large networks are involved.

Chris Ward, a technician at Corporate Software, claimed the services are not as expensive as they look. For example, Corporate Software charges $120 per hour, plus travel expenses, for installation services.

For that price, the user receives recommendations on getting machines "Windows-ready," installation of the software, a virus check and a complete post-installation inventory of each system.

IS changes brewing at Nestle/Hills Brothers

ON SITE

BY MAURA J. HARRINGTON
CW STAFF

SAN FRANCISCO — On an average weekday, the American public collectively gulps down 330 million cups of coffee.

America's caffeine habit is what keeps Nestle/Hills Brothers Coffee Co. happy. Hills Brothers, bought by Swiss-owned Nestle SA in 1984, is the third largest coffee maker in a worldwide coffee market that is much like the stock market: unpredictable, according to Craig Collins, Nestle/Hills Brothers' vice president of finance.

While the information systems department has gone through some minor changes since the 93-year-old company was bought by Nestle, the biggest changes are yet to come, according to Collins, who is also Nestle/Hill Brothers' vice president of information services.

One change being made in the IS department is the shift from dumb terminals to personal computers, Collins said.

Prior to running applications on PCs, all companywide applications including Nesnet, an international electronic-mail system that links all Nestle offices in the world via telephone lines, were called up on dumb terminals through IBM's mainframe-based Systems Network Architecture (SNA), Collins said.

While Nesnet and an internal order-processing system are still located on the mainframe, there are some departmentwide Novell, Inc. Netware local-area networks that connect the few hundred Intel Corp. 80286-, 80386- and 1486-based IBM Personal Computers and Personal System/2s used by analysts and coffee buyers in the company, Collins said. These LANs use high-end 386 or 486 IBM PCs as file servers and are hooked up to the SNA backbone, he added.

At Nestle/Hills Brothers, *IS focuses on computers so the rest of the company can focus on coffee*

"We run a tight shop here, with mostly IBM equipment. Because our primary focus is in selling coffee, we don't take many risks in computerization," Collins said. "I care that the system works so my people can get their jobs done without having to worry about their computer."

Grounds for PCs

The switch toward a PC orientation, Collins said, is being made in part because it is more cost-effective to keep information on a PC rather than an "out-of-date minicomputer." It is also in line with a long-term strategy to move toward a companywide network within five years, he added.

For those PC users wanting to access the on-line order-processing system — a 10-year-old internally developed automated order-processing application — they must access it through a PC shell interface, Collins said.

Although there are some important applications developed internally, "where we can, we will use off-the-shelf software applications," Collins said, adding that as Nestle/Hills Brothers moves toward a companywide LAN strategy, these ready-made applications will be more practical.

Because Nestle decided to combine its European coffee operations with its Hills Brothers Coffee division last August, Collins said, it will be more cost-effective in the future for the coffee company eventually to move to a larger, more open system strategy based on a local- and wide-area network architecture.

While it is still more than five years away, such a networking scheme will still be based on an IBM architecture, "probably IBM's Systems Application Architecture," where one user interface will prevail, Collins said.

Computer-aided software engineering tools and a companywide executive information system are also on Collins' wish list for the perfect computer system. However, Collins said, it will be "a few years" before decisions are even made as to which applications would be considered.

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Quattro Pro: Well-rounded and good value

Technology Analysis — A roundup of expert opinion on new products. Summaries written by Computerworld *copy editor Christopher Lindquist.*

Competing for a stronger foothold in the spreadsheet market, Borland International, Inc.'s Quattro Pro Release 2.0 is a complete package for even the most complex uses, according to reviewers at personal computer publications. For example, Quattro Pro's ability to access external databases gives the spreadsheet power in distributed computing situations. Also, Borland's virtual real-time object-oriented memory management, or VROOMM, memory-handling method permits Quattro Pro to work with very large spreadsheets.

Performance: Reviewers said the package is better than average in terms of speed. However, *PC Week* found Quattro Pro's disk access speed to be slow. Unlike Lotus Development Corp.'s 1-2-3, Release 3.0, Quattro Pro does not support three-dimensional spreadsheets. As a substitute, it offers the capability to link several spreadsheets and save them as a single "workspace."

Compatibility: Read/write compatibility with previous releases of Quattro, Dbase, 1-2-3, Paradox, Reflex and ASCII files is reportedly very high. Quattro Pro does not directly support Microsoft Corp.'s Excel files.

Graphics: Reviewers found Quattro Pro's integrated graphics to be very serviceable, although perhaps somewhat limited.

Output: Reviewers liked Proshow Power Pack, an internal collection of presentation graphics, fonts, macros and coupons for 35mm slide production.

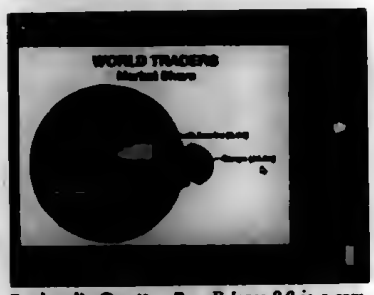
Documentation: Three books as well as a quick reference guide and a context-sensitive on-line Help feature are included.

Ease of learning: Users have a choice of menus. users of 1-2-3 can employ the Lotus-compatible menus, but *Infoworld* reported that Quattro Pro's IBM Common User Access-compatible interface was easier to use, once it was learned.

Ease of use: Menus can be accessed with either the keyboard or a mouse. Alt- and Ctrl-key shortcuts are available for some operations.

Support: Support is available through Compuserve and a toll number between 8 a.m. and 5 p.m. Users who purchase more than 100 units receive an enhanced support package, including a toll-free number and free on-site training.

Value: The product retails for $495 and, at that price, was considered a very good value by reviewers. However, it is not always necessary to pay full retail price. Many users can either upgrade old versions of Quattro ($79.95) or take advantage of Borland's competitive upgrade policy ($99.95) by upgrading from any other high-end spreadsheet such as 1-2-3 or Excel.



Borland's Quattro Pro *Release 2.0 is a complete package — even for the most complex uses*

Reviews Summary

Criteria			
Performance	Very good	Good	Speed and small memory needs
Compatibility			
Graphics	Excellent	Satisfactory	Superior graphics and publishing
Output	Very good		
Documentation	Excellent	NC	NC
Ease of learning	Excellent		
Ease of use	Very good	NC	Efficient menus
Support	Very good		
Value	Excellent	NC	Fundamentally a better deal
Reviewer's score	8.5		

Numeric ratings are based on a weighted scale of 1 to 10 where 10 is best. NC: No comment. These are excerpts from reviews. Refer to actual articles for details.

Quattro Pro 2.0 score:

Points (maximum)	Category
25 (30)	Published reviews
16 (20)	Analysts' ratings
13 (15)	Users' ratings
16 (20)	Cost evaluation
13 (15)	Vendor financials

(Maximum score: 100)

RATINGS

What the experts say

Hudson Foods' *Poland*

• Users: Christopher Poland, Hudson Foods (*performance:* 9, *cost:* 10); Mitch Miller, Super Travel Data Services (9, 8.5); Mark Levitt, International Data Corp. (9, 6); Bob Rhodes, Yavapai County, Ariz. (9, 8); Cliff Cuellar, Washington State Department of Natural Resources (7, 5); Duane Phelps, Maxtor Corp. (9, 8.5)

"Quattro Pro 2 with the SQL Link it allows interoperability between Quattro Pro 2 and Paradox. This facilitates users being able to get access to SQL databases that are located remotely — making it easy to get information from your database to the spreadsheet and from your spreadsheet to your database," Phelps said.

• Analysts: Marshall Moseley, Dataquest, Inc. (*performance:* 8.5, *cost:* 8); Earl Rich, Faulkner Technical Reports (8.5, 9); David Cearley, Gartner Group, Inc. (8, 9)

"It's extremely quick. It has processor and display support, which really makes it a strong choice in an environment where you have everything from old [IBM Personal Computer] XTs to powerhouse 386s. But I'd like to see it use extended memory, I'd also like true three-dimensionality, and I'd like to have a Windows version. Given the competitive upgrade scheme that Borland has offered and continues to offer, it's possible for many people under many circumstances to get the product for a very low amount of money," Moseley said.

• Financials: Alfred Tobia, Mabon Nugent & Co. (*overall rating:* 9); Charlotte Walker, Labe Simpson (9); W. Chistopher Mortenson, Alex. Brown & Sons, Inc. (9); David Bayer, Montgomery Securities, Inc. (8); Jim Wiel, Soundview Financial Group (7)

"They have a very debt-free balance sheet. The only negative in the whole Borland story is that they've sort of locked themselves into selling this product as a $99 upgrade, and the task remains to raise the price of the product to its full retail price. That's going to be difficult after Lotus ships its Windows product and Borland ships its Windows product. You can only sell $99 software for so long. The company financially is as healthy as can be," Tobia said.

Borland responds

Comments from Jack Oswald, product manager for DOS spreadsheets:

Performance: Regarding concerns about disk access, there is some degradation of performance for spreadsheets that take up 95% of memory. In those instances, VROOMM will kick in and frequently access the disk in order to bring in the next function you're asking for. The trade-off is now you're working with a bigger spreadsheet than you could have used before.

Compatibility: [A Windows product is] not a long way off — it's going to be sometime this year. We're actively developing for future DOS versions.

Value: In the last year and a half, we've shifted significantly toward selling the full price unit. We're still selling more units at the competitive upgrade price, but we're generating more revenue from sales of full-price units.

As long as there are people using competitive spreadsheets who have a reason to want to buy a competitive upgrade from us, we'll continue to offer that. But that segment of the market is becoming less and less significant.

NEXT WEEK

▶ Informix Software, Inc.'s Wings is noted as the best graphics spreadsheet but the least compatible.

Methodology: *Published reviews: average of numeric scores from product reviews published by PC publications listed in reviews summary chart multiplied by three. All ratings are based on a 1-to-10 scale, where 10 is excellent. Analysts: average overall product ratings multiplied by 2. Users: average overall product ratings multiplied by 1.5. Cost: average cost to get product up and running ratings from both groups multiplied by 2. Financials: average of analysts' ratings of vendor financials and ability to support product from financial analysts multiplied by 1.5.*

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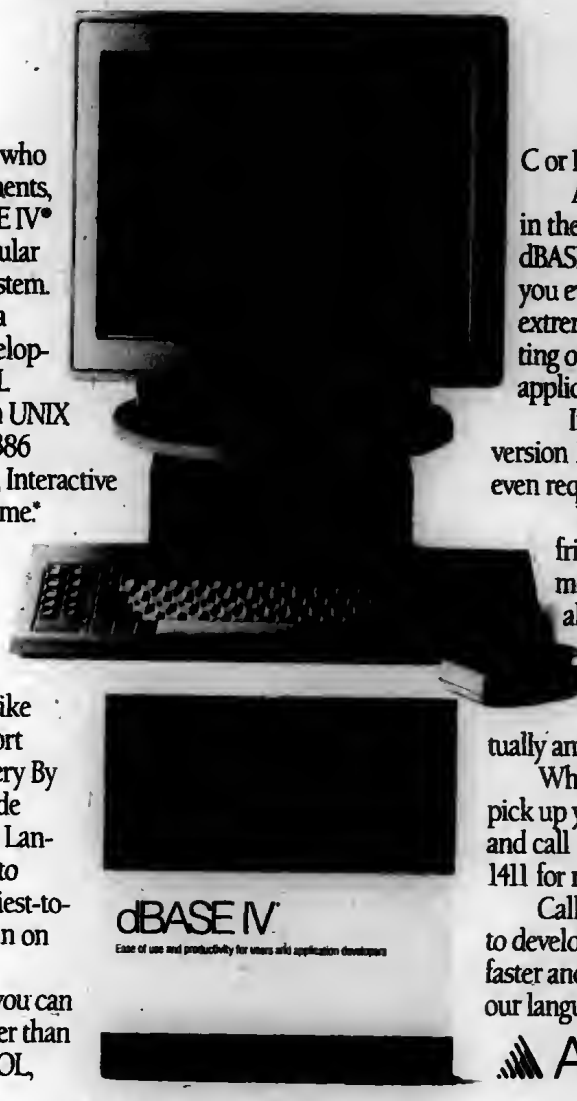

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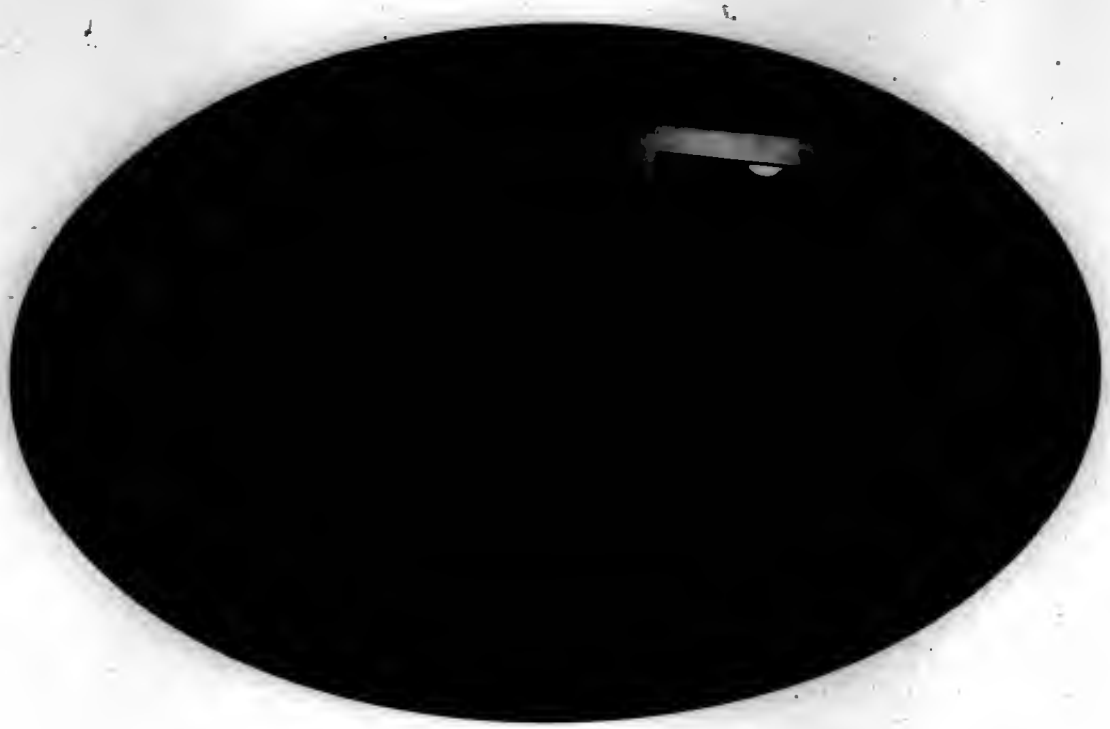

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Wang introduces PC-based tool

LOWELL, Mass. — Wang Laboratories, Inc. recently unveiled a personal computer-based document image processing software package that was designed to electronically manage paper-based information.

Called Seaview, the package combines Wang's Open/Image-Windows — which integrates imaging onto PC and PC local-area network applications within Microsoft Corp.'s Windows 3.0 environment — with a SQL relational database from Gupta Technologies, Inc.

The product electronically duplicates paper documents as images, which are then stored within the database for retrieval. End users may create queries for search-and-retrieve functions and can use the program to send and receive facsimiles and display or print images from the desktop.

Jointly developed by Wang and Science Engineering Associates, Inc. in Albuquerque, N.M., the software runs on Intel Corp. 80286-, 80386- and I486-based platforms that support XT/AT bus, Micro Channel Architecture, Extended Industry Standard Architecture and Netbios.

Seaview Administrator Station ($2,450) allows customers to create, modify and delete image cabinets in both stand-alone PC and PC LAN configurations. The Seaview Client Station ($1,450) is targeted specifically for LAN environments, while the Seaview LAN Pack ($5,850) offers licenses for Administrator and Client Station.

Graphing tool

CONTINUED FROM PAGE 35

Lotus Development Corp.'s 1-2-3 and Borland International, Inc.'s Quattro, for instance, "are not particularly good because they only plot numerical information," Cook said.

DVT, which runs on IBM-compatible personal computers, reads data from ASCII files as well as 1-2-3 and Ashton-Tate Corp.'s Dbase file formats. The program is menu-driven and can present multiple graphs in user-manipulated windows.

According to beta testers, the software is easy to use. However, "people who have a good understanding of relational databases will get the most power out of it," Cook said.

At $490, the software is overkill for those users who simply want a visual rendering of their data, the beta-test users said. "It's more a tool for people who are very much interested in pulling information out of the data," Cook noted.

The software reportedly runs well, except for slowness when it comes to removing or swapping elements in graphs already drawn.

"I like to try one thing and then try something else," said Brown, who runs the package on an Intel Corp. 80386DX-based IBM compatible. "The facility should be in there so you could do that almost instantaneously."

"It's kind of awkward to go through that process," said Cook, who added that Intelligenceware said it intended to work on improvements.

Sidekick gets windowing feature

BY JAMES DALY
CW STAFF

SCOTTS VALLEY, Calif. — Borland International, Inc. has announced an update to Sidekick, a software hub for users of personal and business organizers.

Sidekick 2.0 was designed to coordinate data within groups using a variety of laptop and notebook computers, palmtop organizers, local-area networks, pen-based organizers and pagers.

The refreshed application uses a windowing interface to integrate a time planner that maintains calendars and appointments, an address book that offers a speed-dial feature, a note pad for writing quick memos, a calculator and a communications application used for data calls to on-line services.

"I don't use a day planner anymore; I just carry a disk," said Bruce O'Blander, a financial consultant at the Bank of America National Trust & Savings Association in San Francisco.

Sidekick also offers a reconciliation feature that notes when a schedule conflict occurs — for instance, the feature will recognize when a user has one schedule on a portable system and another on an office personal computer.

It also supports Novell, Inc., 3Com Corp., IBM Token-Ring/Extended Edition, Banyan Systems, Inc. and other networks that are compatible with DOS 3.1 or higher. Automatic record locking allows users to access the same file simultaneously. An auto screen refresh updates all screens automatically when a common file is changed, allowing the user to view the most current information.

The time planner, address book and communications applications use Borland's Paradox engine and standard Paradox file formats. These formats support data exchange with Paradox and Quattro Pro and enable third-party developers to provide access to the Sidekick applications. Sidekick 2.0 will be priced at $99.95 but is being offered for a limited time at an introductory price of $69.95.

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Multisided Tariff 12 debates not over yet

ANALYSIS

BY GARY H. ANTHES
CW STAFF

This is a pop quiz: AT&T's Tariff 12 offerings are (choose all that apply): 1) anticompetitive, ultimately leading to higher prices and less innovation; 2) free-market enterprise at its best, bringing users lower prices, better service and simplified networking; 3) a secret price list that allows AT&T to illegally skirt the tariff process; 4) affirmed as legal by the courts, needing only a few details to be sorted out by the Federal Communications Commission; 5) something MCI Communications Corp. and U.S. Sprint Communications Co. do that they don't want AT&T to do.

All of these views and more are argued passionately by the players in a six-sided tariff tiff involving AT&T, its competitors, the FCC, the courts, customers and third parties who have wrangled nonstop since the FCC began approving Tariff 12 deals more than three years ago.

Tariff 12 provides large users with customized packages of voice and data services at large discounts off standard component prices, generally for periods of three to five years.

AT&T said competition at the high end of the business market — Tariff 12's primary target — is now vigorously competitive. Therefore, the ties that bind AT&T can be loosened, the argument goes. The interests of users as well as basic rules of fair play say AT&T should have the same right as MCI and Sprint to offer custom, discounted services, AT&T contended.

Besides, Tariff 12 buyers do not need any help from Uncle Sam, AT&T executive William Catucci recently told an audience at the Communication Networks '91 trade show. "Large business users don't need regulations to help them negotiate with suppliers. They do that all the time — and quite well," he said.

Still too big

AT&T's competitors, although they own 40% of the $5 billion annual market for Tariff 12-like services, said AT&T is still the dominant player, with 65% of the long-distance market — five times that of No. 2 provider, MCI. Therefore, they contended, AT&T should not be deregulated further at this time.

The FCC sided with AT&T on the issue and has approved 76 Tariff 12 options for more than 100 customers.

However, the commission was dealt a setback last October when a federal appeals court found fault with the way the FCC found Tariff 12 to be legal. The court said tariffs based on tailored packages of services for single customers were not inherently illegal, but it ordered the FCC to reconsider its decision, saying the FCC would have to show that Tariff 12 packages are functionally different from their separate components, not simply different on a cost basis, as it had done earlier.

Although users are not completely happy with Tariff 12 (see story at right), they welcome the additional options offered by AT&T's presence in the market. "Competition is the best way to ensure the best services at the best prices," said Henry D. Levine, a Washington, D.C.-based attorney who represents large telecommunications users.

AT&T and most FCC watchers said they are betting the FCC will get its act together and find a way to preserve Tariff 12 more or less in its present form. "The prevailing view [at the FCC] is to be rather tolerant of Tariff 12," FCC Commissioner Ervin S. Duggan said at Comnet.

Also weighing in against Tariff 12 are third parties that view giant AT&T as an impediment to their getting a piece of the action. Noncarrier systems integrators said they are handicapped by their inability to price out alternate circuit configurations because they do not have access to carriers' discounted price structures.

Equipment manufacturers also said that AT&T may overtly or covertly pressure customers to buy AT&T equipment as part of a Tariff 12 deal. "AT&T is the only carrier that has an integrated equipment division," said Robert W. Stearns, a Codex Corp. executive and a director of the Independent Data Communications Manufacturers Association. "This . . . could lead users to think, incorrectly, that they must also buy AT&T [equipment] out of fear of losing the large discounts."

No matter what the FCC does now, a final resolution of the legality issue is a year or so away, industry watchers said. For now, the FCC is likely to keep approving Tariff 12 deals.

It pays to be prepared

When it comes to entering into Tariff 12 deals, users said three things are important: preparation, preparation and preparation.

"I like the general idea of [Tariff 12], but you have to be a tariff lawyer to understand what's being offered," said John Macri, a Bankamerica Corp. vice president, "You have to do a lot of analysis up front."

Horror stories about Tariff 12 invoices abound. Susan Morrow, communications manager at Kemper Financial Cos., said her invoices have been plagued by "major delays, major errors, changes without notice and considerable manual intervention required."

But Kathy Mock, communications manager at Caterpillar, Inc., said she has had no problem with her Tariff 12 invoices, something she attributes to "very careful homework" when working with AT&T to set up the service.

"Know your network up front," said Paul Singer, manager of communications planning at US Air. "[Implementation] is a tedious process."

James Blaszak, the Washington, D.C.-based counsel for the Ad Hoc Telecommunications Users' Committee, said extra caution is in order until the legality of Tariff 12 is firmly established. "Attempt to negotiate safeguards," he said. For example, he said, it might be possible to negotiate a refund provision for one-time installation charges in case the FCC or the court pulls the rug out after Tariff 12 service begins.

GARY H. ANTHES

Network programming requires new attitudes

BY JOANIE M. WEXLER
CW STAFF

Companies needing customized local-area network applications may find themselves shorthanded in programming expertise. The reason, some industry observers said, is that LANs are a relatively new technology and require a skill shift for veteran mainframe programmers.

Vic Novasad, a senior applications consultant at G&A Systems Associates in Oklahoma City, for example, has been a tried-and-true mainframe developer since 1970. In December, however, he discovered a graphics-based tool from Austin, Texas-based Syscorp International, Inc. that automates applications development for Novell, Inc. Netware and IBM Personal Computer network LANs.

"I started testing the tool the first week in December with 64 specifications to meet," Novasad said. "By the 14th of the month, we had incorporated user changes, brought the application up on our Novell network, and everything was working."

As the programmer "paints" an application on the screen, Syscorp's Microstep Version 1.5 software — officially rolled out last month — automatically generates C source code.

"The product fills an important gap: a full life-cycle [computer-aided software engineering] tool that is married to the PC LAN platform," said Frank Michnoff, a program director at Westport, Conn.-based Meta Group, Inc.

"Other vendors, such as Texas Instruments, Inc. and Andersen Consulting, may eventually target the client/server architecture. But the fact that this company has this product today suggests that smaller, more nimble vendors could be a major force in the LAN market."

According to Michnoff, many of his clients "have 150 Cobol programmers who are totally resistant to new technologies." New engineering graduates, he noted, may have up-to-date programming skills but not the business savvy of a 15-year veteran developer.

The shift in gears for developers reorienting their thinking from mainframe- to PC- and LAN-based applications is that "with a mainframe, you try to think like the computer and do what the computer will accept," said Peter M. Storer, manager of information systems at The Acord Corp., a White Plains, N.Y.-based nonprofit insurance association. "In the microcomputer world, I decide what I want to do, then figure out how to make the computer do it."

Acord recommends technology to its insurance company and agent members. Storer said the nature of a program such as Microstep "lets you concentrate on business applications instead of worrying about the intricacies of the source code."

Kevin van Noppen was responsible for KPMG Peat Marwick's rapid applications development methodology when he benchmark-tested the original stand-alone PC version of Microstep two years ago.

"Microstep is a graphical language more than a CASE tool," van Noppen observed. "It develops the application in front of you and lets you change it as you go. Companies using other tools must often throw away seven or eight application prototypes."

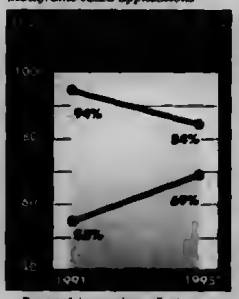
Van Noppen said that in the master/slave environment of the mainframe world, development rules are well-defined. In the distributed environment, he said, it is much more difficult to define how to manage data.

"For example," van Noppen asked, "if two people grab data simultaneously and one user changes it, what happens?"

Novasad acknowledged that Microstep is not yet as fast as Nantucket Corp.'s Clipper language. "However, Clipper isn't standard," he said. "You need the same person available if you need to change it; with Microstep, anyone can make changes."

Net gain

The next five years will see LAN-based applications close the gap on mainframe-based applications



Source: International Data Corp.

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Firms announce plans for future services

AT&T and British Telecom unveil long-term E-mail and ISDN service plans at Comnet '91

BY ELISABETH HORWITT
CW STAFF

WASHINGTON D.C. — Two value-added network vendors revealed long-term service strategies at the recent Communication Networks '91 show.

AT&T officially launched its Easylink Service, which will merge its former AT&T mail service with the electronic-mail service that it recently acquired from Western Union Corp. British Telecom PLC subsidiary BT Tymnet, Inc. also announced a multiyear migration path to broadband Integrated Services Digital Network (ISDN) services.

AT&T is concentrating on setting up a global messaging service that will handle multimedia messages "and provide all the hooks so that you can access voice mail via E-mail, for example," said Berge Ayvasian, a vice president at The Yankee Group in Boston.

AT&T's recent acquisition of Western Union's Easylink provides a strong overseas presence because Western Union had aggressively installed E-mail connections overseas to take advantage of users' migration from telex to personal computer messaging, he added.

Steven Graham, Easylink's vice president of marketing, outlined the following key strategic directions that AT&T's 1,500-person business unit will pursue during the next few years:

- Support of multimedia transmissions through AT&T's message-content architecture. This will allow such capabilities as cutting and pasting bulletin board information or directory information into a document.
- The provision of image databases.
- The introduction of new features such as alternate addressing and routing of messages, message status reports and media conversion to electronic data interchange.

AT&T will also aggressively expand the global reach of its messaging services, Graham said. While the company now serves 160 countries and "key centers," it has operations and facilities in only 20 countries, he added.

Former users of AT&T's mail system and Western Union's Easylink can now access both services via the same mailbox, Graham said.

AT&T's present concentration on messaging services puts it at odds with value-added network vendors such as BT Tymnet, which are aggressively introducing fast-packet services, Ayvasian said. However, AT&T will probably announce frame-relay services later this year, he added.

Migration ahead

BT Tymnet announced plans to migrate its users to broadband ISDN during the next few years.

In the second quarter, Tymnet plans to support frame relay-based connections of up to 256K bit/sec., as well as its existing X.25 packet-switching services. The vendor plans to target local-area network interconnectivity applications and is now working with such router vendors as Advanced Computer Communications, a company spokesman said.

Sometime in 1992, BT Tymnet plans to implement a full frame-relay backbone that will provide features such as dynamic routing and Switched Virtual Circuit connections at speeds of up to 2M bit/sec. In 1994, the vendor plans to provide frame-relay connections over broadband links of 45M bit/sec. Sometime after 1995, BT Tymnet will provide frame relay over broadband ISDN backbones, a spokesman said.

Network management gaps targeted

Users who have stopped kicking tires and are now seriously shopping for an integrated network management platform saw plenty to catch their eye at the recent Communications Network '91 show.

Announcements targeted two items at the top of users' wish lists: broad support of networking systems and protocols and fault isolation and analysis.

Nynex Corp. announced Version 2.0 of its Allink Operation Coordinator, which is said to use expert system technology to filter, consolidate and correlate information provided by various element management systems. The software is said to track and graphically display the relationship between various devices and systems on a network.

Systems Center, Inc. in Reston, Va., released Net*Insight, a software package that is said to isolate faults and analyze performance IBM Systems Network Architecture (SNA) networks. The software can take user-defined samples of network utilization, response times and IBM Network Control Program statistics. It can also analyze network problems by tracing multiple communications lines and collecting network data flow and VTAM trace data, the vendor said.

The software package is priced from $13,000 to $23,000 and is available immediately.

British Telecom PLC announced that its Concert platform will manage Timeplex, Inc.'s T1 multiplexer networks, as well as systems that support Simple Network Management Protocol (SNMP), beginning in June.

British Telecom is also working with IBM on an interface that will allow Concert to manage IBM SNA networks via an Open Systems Interconnect interface, a British Telecom spokesman said.

AT&T announced that it has released a document that allows network vendors to build systems to convert SNMP messages to the Accumaster Integrator Alarm Interface specification.

Boole & Babbage, Inc.'s Network Systems division, formerly Avant Garde Computing, announced an interface between its Net/Command system and AT&T's Accumaster.

ELISABETH HORWITT

BIT BLAST

Sprint splits circuits

U.S. Sprint Communications Co. is divvying up its customers' T1 circuits to allow them access to the Sprint Meeting Channel, the carrier's worldwide videoconferencing network. The capability builds on Sprint's Integrated T1 Access Partitioning service.

A relationship between token-ring vendor **Madge Networks, Inc.** and **Synoptics, Inc.** is intended to beef up Synoptics' smart-hub functionality. The two firms recently announced that Madge's throughput-maximizing Fastmac software and bridge management software will be rolled into Synoptics' Lattisnet intelligent wiring center.

International Computers Ltd. and **Fujitsu Ltd.** have signed an agreement under which Fujitsu will sell ICL's reduced instruction set computing-based Unix servers and mid-range systems and Officepower integrated office system.

An alliance between Omaha-based interexchange carrier **Midamerican Communications** and **US West Communications** will result in US West's disaster recovery network scheme being deployed in two of Midamerican's major markets: Denver and Minneapolis.

Modem prices are dropping: Last month, **UDS** announced across-the-board reductions of 17% to 31% on its CCITT V.32-compliant modems. Meanwhile, **Usnet Technologies, Inc.** announced that it is offering Telebit modems at reduced prices. Usnet said it is offering a 9.6K bit/sec. V.32 modem for $545; UDS' reduced-price Telebit counterpart is $795.

IBM, router vendors wield SNA swords

BY JOANIE M. WEXLER
CW STAFF

IBM is probably finding inspiration from at least two router vendors to supply the missing pieces of its Advanced Peer-to-Peer Networking scheme.

Cisco Systems, Inc. and Wellfleet Communications, Inc. seem to be trying to beat IBM to the punch in blending IBM's inherently hierarchical Systems Network Architecture (SNA) with distributed computing and peer communications. Last month, both router vendors announced support in their products for IBM's Synchronous Data Link Control protocol, which is used for communications among remote IBM SNA devices.

The product enhancements allow disparate networks to merge over the same serial data backbone, possibly eliminating a communications line, by encapsulating SNA packets inside other "routable" protocol packets.

Some large IBM shops run an SNA network and multiprotocol internetwork in parallel, which can require the redundant leasing of dedicated wide-area links. Firms undertake this costly endeavor because SNA, IBM's network architecture for communications between IBM devices or between IBM and non-IBM devices, is proprietary and complex, leaving it unsupported in existing multiprotocol routers.

However, at the Communication Networks '91 show in Washington, D.C. last month, Cisco announced that it has found a way to blend SNA with the other networking protocols that flow through its router.

New deal on the horizon

The firm said it has inked a multiyear agreement with start-up firm Brixton Systems, Inc. in Cambridge, Mass., for source code that will allow its product line to route SNA protocols within the year. Cisco also said it will acquire Brixton code that interfaces its routers to IBM's Netview enterprisewide network management system.

"Local-area networks are pervading the 'corporate' network, where IBM has traditionally been king," said Robin Layland, an engineering consultant at The Travelers Corp., a large IBM user. "IBM is trying to figure out how to hold its position in the shadow of competition from these router vendors."

Layland remarked that a key issue in networking is that "you don't want separate boxes for each protocol." Indeed, some users place both a multiprotocol router and an IBM front-end processor next to their wide-area switch, which passes SNA data to the front-end processor and other traffic to the router.

Another approach is to hook SNA nodes to a token-ring network and link LANs with IBM's proprietary source-route bridging scheme. Unlike routers, bridges ignore communications protocols and simply broadcast each transmission to all nodes. The trade-off is that broadcasting can saturate the network and inhibit security by not allowing network partitioning.

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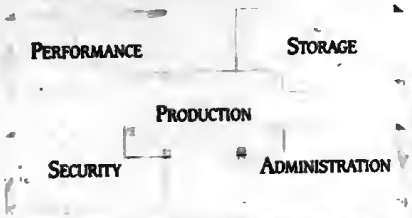

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MANAGER'S JOURNAL

EXECUTIVE TRACK

Patrick L. Kelley has been named vice president of information services at **Air Canada** in Montreal.

He is responsible for overall systems strategy at Canada's largest airline.

Kelley was most recently managing partner of the information technology practice at Peat Marwick Stevenson & Kellogg. His 20 years of experience in information systems management and consulting include the job of senior vice president of strategic development at Molson Breweries of Canada Ltd.

Donald V. Earle, formerly director of IS at University Health Center in Burlington, Vt., has been named president of **The Alpha Group**, a healthcare industry IS consulting firm in Williston, Vt.

Before joining University Health Center, Earle, 35, was coordinator of computer systems at Massachusetts General Hospital in Boston. He holds a bachelor's degree from Bates College in Lewiston, Maine, and an MBA from Boston University.

James A. Haskett has been promoted to director of information resources at **Central Washington University** in Ellensburg, Wash.

He joined the university in 1988 as director of computer services. He was previously in IS management at Indiana University in Bloomington, Ind.

Who's on the go?

Changing jobs? Promoting an assistant? Your peers want to know who is coming and going, and *Computerworld* wants to help by mentioning any IS job changes in Executive Track. When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Clinton Wilder, Senior Editor, Management, *Computerworld*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701-9171.

Gateway puts pennies in its bank

Bank realizes savings of more than $100,000 per year using PC-based optical discs

BY MICHAEL ALEXANDER
CW STAFF

The vendors and value-added resellers who trooped through Martin Brennan's office in 1987 pitching document imaging systems simply did not get the picture.

"I kept asking them, 'What are we saving?' " recalls the senior vice president of operations at Norwalk, Conn.-based Gateway Bank.

What Brennan needed was not a way to store documents but a substitute for microfiche. Gateway, a medium-size bank with $1.3 billion in assets, was spending $130,000 per year to have tapes from the bank's IBM 4341 copied to microfiche.

None of those who came to pitch their document storage solutions were interested in solving the bank's microfiche problem, Brennan says. "In 1987, they told me that it couldn't be done, and that didn't make sense to me," says the veteran of more than 25 years in bank information systems management.

That was the prelude to Brennan convincing Gateway to spend $12,000 for then-unproven personal computer-based optical-disc technology. That is not a lot of money for many businesses, but banks have a cautious attitude toward capital expenditures, says David DiVincenzo, president of Integrated Financial Systems, Inc. (IFS), the value-added reseller in New Haven, Conn., that developed the system.

"This is a case where [Gateway] went out on the edge a little bit and realized a benefit starting in 1988, while everyone else sat on the sidelines," DiVincenzo says.

Brennan says he had to get approval from the bank's chairman for the $12,000 needed to attempt the project. "He said, 'Go ahead and try it,' " Brennan recalls. "At worst, we would have bought a PC."

The initial system, installed at the operations division in Newtown, Conn., included a no-frills IBM Personal Computer AT, a 5¼-in. write-once read-many (WORM) optical disc drive, a tape station and a printer. All of the equipment was from IBM.

"This is an all-IBM shop, and they wanted to be able to get the equipment fixed easily if there was a problem," DiVincenzo says.

IFS developed the software needed to archive and retrieve the reports easily once they had been stored on optical discs.

Gateway's Brennan *was able to save hundreds of thousands of dollars by investing $12,000*

"In the first month, we saved $2,000 on microfiche," Brennan says. "From there, it got to be a snowball."

Following its early success, the bank shifted all of its applications to optical disc, completing the job in 1988. Now there are 14 banking applications stored on discs. They include customer and commercial checking and savings accounts, installment loans and mortgages — all of the banking reports that the bank generates.

The system has undergone refinement almost from the first day. Gateway now uses three PCs equipped with optical disc drives, and a fourth PC is slated to be added this year. A mirror image of the setup in operations has been installed at bank headquarters. All of the PCs are IBM PC AT-compatible clones.

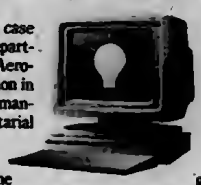
Unlike in days past, few of the

Continued on page 52

LTV Aerospace and the Last Crusade

BY CLINTON WILDER
CW STAFF

Empowerment of employees with information technology is like the Holy Grail: Many have spent a lot of money searching for it, but the goal remains elusive.



That is no longer the case in the office services department at LTV Corp.'s Aerospace and Defense Division in Dallas. The department managed to cut annual secretarial expenses by 40%, eliminate nine of 18 secretarial jobs and retrain the displaced employees for other positions.

However, it was not easy, and technology had very little to do with it. In fact, LTV accomplished these goals with the office technology that was already in place.

Bobby Harper, director of information services at LTV Aerospace, established a task force in which both secretaries and managers participated. The committee analyzed work flow and work loads, how much of the workday was spent performing what tasks and what was done on paper vs. what was done electronically.

The committee confronted managerial fiefdoms, secretaries' fear of change and technologists' fear of working with secretaries to solve technology problems. However, Harper, who was the self-designated change agent, continued to believe that the eventual benefits would be worthwhile.

"We always talk about the paradigm shift — of IS changing the way work is done," Harper said at the recent Profit-Oriented Systems Planning Program conference in Los Angeles. "Well, if you want to shift that paradigm, you're going to have to push."

The task force identified a host of clerical, paper-intensive tasks that could be done by the managers themselves on LTV's IBM Professional Office System electronic mail package. These included weekly status reports, meeting announcements, agendas and memos. "The memos are faster, too. They're not fancy, but the information is there," Harper said.

The improvements are now a model for other LTV Aerospace departments looking to cut costs. For example, a companywide 40% cut in secretarial costs would save $7.2 million per year, according to Harper.

Gateway

FROM PAGE 51

reports are ever printed on paper. When the auditors want to look at the general ledger, for example, they no longer have to leaf through a 900-page report on computer paper. They merely pop a pocket-size disc into a drive and enter a few simple keystrokes to retrieve data.

"One month into the project, the general ledger was off by nine cents," Brennan recalls. "Tell a banker that the general ledger is off nine cents, (and) you might as well say it was off by $1 million." The error was uncovered in a few minutes instead of a few hours, Brennan says.

The WORM drives used at Gateway are capable of packing 200M bytes of data onto a disc. Newer versions can store 940M bytes on the same size disc. A single disc can store one month's worth of information per application. More information could be crammed onto a disc, but "the size fits nicely," Brennan says.

Gateway's savings have amounted to more than $100,000 per year for the past three years, according to Brennan. Gateway now spends about $21,000 per year for discs instead of the $130,000 per year it once paid to a service bureau to transfer tapes to microfiche.

The tapes are transferred on site rather than being sent out to the service bureau. This has compressed turnaround time from three days to four hours. The system has also produced savings in personnel and has improved customer service.

Clerks no longer have to spend several hours checking microfiche returned from the service bureau for quality and completeness. Nor do they have to maintain a log or track records and microfiche that must be returned for reprocessing when faulty. The ease and speed with which infomation can be stored and retrieved has improved customer service by cutting response time on customer account inquiries.

"Before, we had to manually retrieve the microfiche, and that took about 28 minutes," Brennan says. "Now, it takes three to five seconds to find the same information." The bank can now react to a customer's request for a statement virtually overnight, he says. Furthermore, two fewer clerks are now needed to process statements and other banking records.

The system has also helped the bank get out from behind an ongoing five-week backlog of requests for copies of customer statements and reports from the Internal Revenue Service.

GATEWAY'S SAVINGS have amounted to more than $100,000 per year for the past three years.

Gateway's success has rubbed off on IFS: The company now markets what it calls the Optical Disc Information Network to other banks seeking to replace their microfiche systems. The company has sold 15 of the systems, which are now available in stand-alone and networked versions, according to DiVincenzo.

Brennan is now more receptive to image documenting systems than he was three years ago. He is currently researching what it would take to move images of checks on rolls of photographic film onto optical discs.

The current system records only the information on the magnetic ink character recognition line at the bottom of checks. When a complete image of the actual check is required, the bank's clerks must retrieve it from film and have it processed into hard copy, which is time-consuming.

"Ninety percent of the lookups are for checks," Brennan explains. What Brennan needs now is a document imaging system for checks, but he says he cannot get what he wants just yet.

"IBM, Unisys Corp. and NCR Corp. are catering to the large banks," he says. "Five years from now, they may have it for guys like us."

If the past is any indication, Brennan may not wait that long.

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PC Magazine 12.11.90 (Ziff-Davis Publishing) "9600-BPS MODEMS: Breaking the Speed Barrier-PC LAN Labs tests seven rapid-fire modems complying with V.32, V.42 and V.42bis standards."

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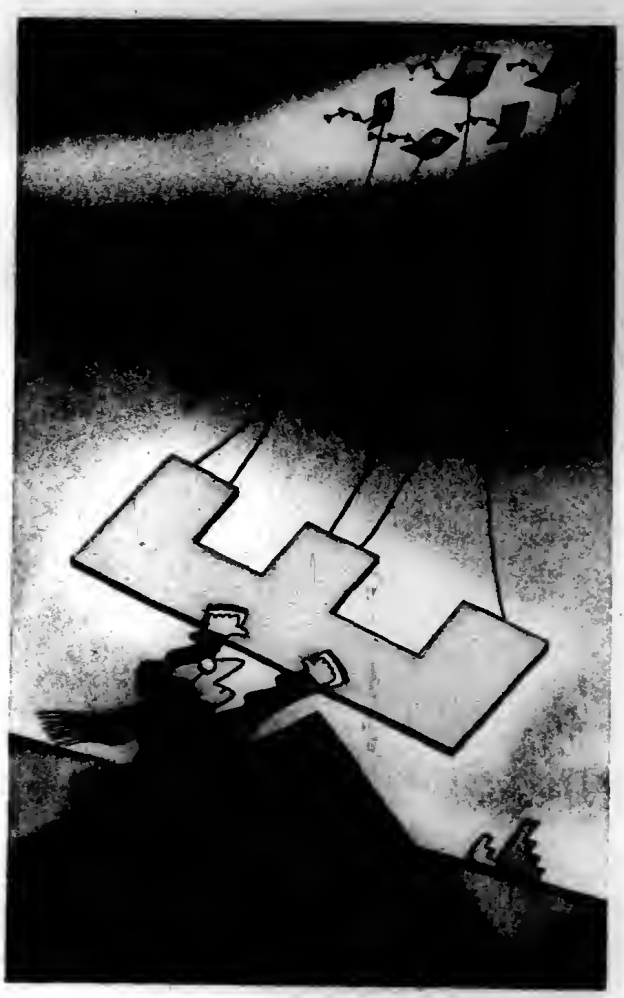

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BOOK REVIEW

Armageddon, oxymorons — and feeling fine about it

THE AGE OF UNREASON
By Charles Handy
Harvard Business School Press, $18.95

When you sit down to read Charles Handy's *The Age of Unreason* — and I hope that you do — don't let the book's compact size and anecdotal style lull you into thinking you're going to be done before dinner. Be sure to factor in extra time for the moments when you may need to snap the book shut, beat your head against the nearest hard surface and say "Arrgh!".

The premise and philosophy of Handy's jolly apocalyptical treatise is summed up by rock group R.E.M.'s jolly apocalyptical refrain: "It's the end of the world as we know it, and I feel fine."

Indeed, that oxymoronic twist is the value that Handy, a British management consultant, professor and author, adds to what might otherwise be an old debate. Yes, the world has changed vastly, irrevocably and quickly. But Handy takes a quantum leap beyond and suggests that the end of the world as we know it is a pretty exciting turn of events, if only we choose to see it that way.

From one point of view, *The Age of Unreason* is a seductive invitation into an exhilarating concept. "Discontinuous change" — the breakneck, sweeping, relentless phenomenon that change has become — could usher in not only the end of the world as we know it, but also the start of the world as we wish it. If we greet this new kind of change with "upside-down thinking" — the ability to "consider the unlikely if not the absurd" — then we can harness the otherwise daunting convergence of social, biological, technological and cosmic mutation to energize the maturing of mankind. Not Armageddon — rather armed to get on.

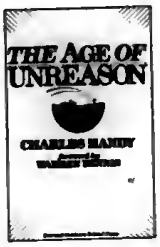
Armed with the ability to think upside-down, Handy suggests, we will recreate the world and redefine the work world. He foresees the dinosaurlike demise of the large, paternalistic top-down firms. In their place, he sees "shamrocks" and "doughnuts."

According to Handy, a shamrock is a company made up of three groups: die-hards, whose careers may span as few as 10 to 15 years but who will devote virtually their entire lives to their jobs during that time; outside contractors (in other words, outsourcing in the extreme); and a flexible work force consisting of off-site, largely telecommuting workers with discrete abilities and/or unconventional time constraints — mothers of young children, for instance.

The doughnut works on a similar premise, with the career-oriented core in the middle and subcontractors and telecommuters in the surrounding ring.

In the world of the shamrocks and the doughnuts, offices become clubs in which workers who need the common facilities or collegial comaraderie can gather as need dictates. Work becomes defined by the abilities and work style preferences of the workers. Pay — which includes, but is not limited to, money — is awarded unfailingly for a specific job well done.

However, there are two catches that underlie and, to some extent, undermine Handy's argument. The first (which, to give him his due, Handy recognizes) is that the new, upside-down world doesn't take into account a lot of the baggage that is bound to be carried over from the old world. For example, we are already finding that the bottom-line drive of today's corporations is creating a huge number of unemployed that no one knows what to do with. Handy's pragmatically driven shamrocks and doughnuts, however intellectually appealing, would compound the problem.



Yet Handy reminds us, revolutionary innovation never has been, and arguably never should be, held back by consideration of the havoc it might wreak. Point: Handy. Game? Not so fast.

The second limitation is that several thousand years of history have produced and reproduced the very kind of control-hungry business leaders that would make Handy's new order an impossibility.

"If control is left to one person," he writes, these intelligence-driven organizations do not work. The "postheroic" leader he posits as evolving under his scenario "lives vicariously, getting kicks out of other people's successes — as old-fashioned teachers have always done." Right. This concept was floated in ancient Greece. It sank then and hasn't had much better success since.

Don't let that stop you from reading *The Age of Unreason*, though. At the very least, the book abounds with provocative, good ideas. At best, some of Handy's ideas might catch on. After all, at the end of the world as we know it, wouldn't you prefer to feel fine? With so many moronic management ideas and future scenarios being bandied about, oxymoronic seems well ahead of the game.

NELL MARGOLIS

Margolis is *Computerworld*'s senior editor, industry.

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COMMENTARY

Thomas Lodahl

Just say career rotation

Two years ago, I met the newly minted chief information officer of a major bank. The position had just been created, and he had four direct reports, but the bank's data processing operations (900 strong) were still controlled by the hard-as-nails vice president of data processing.

The CIO had no experience in information systems. So why was the position created? Business management at the bank couldn't get the attention of IS, felt ignored and couldn't get things done. Ergo, appoint a CIO to translate business problems into IS action!

We've seen this scenario many times. What's wrong with this picture? The bank's CIO had the power of office, but he had not yet earned credibility. You achieve credibility by getting things done. He had no means to get things changed in IS. Eighteen months later, the office of the CIO was "reorganized," and the vice president of data processing took over.

Not a pretty picture? It's a pretty common way to develop a senior IS executive: Throw him in and see if he can swim. Here it's a case of "Simonize the humanist" — a phrase I owe to Howard Johnson, late of MIT — by putting him in the rock polisher.

Those who survive — and there are some — can become extremely valued members of senior corporate management. But the attrition rate and cost is high. There must be a better way.

How about reversing the process? Let's humanize the vice president of data processing. Send him off for executive development, give him an office in "Mahogany Row," put him on the executive committee.

The problem with this method is that our candidate came up through the IS ranks, where he was promoted mainly for technical management skills. He may not know beans about marketing or finance. And at first, he feels and acts like a fish out of water, which he is.

However, give him a year and some lunch, and he's got a chance to make it — at least a better chance than our ex-banker CIO in the rock polisher. He'll get credibility because he can get things done — he knows how IS works.

The problem with developing senior IS executives is that the requirements have changed. When IS was a back-room function, we wanted a competent technologist who could manage other techies. Now that it's a front-line function, we need someone who can focus IS power on adapting the business to rapidly changing markets, competition and ownership patterns. This means understanding and having credibility in IS and business.

Today, the ones who can do that were created by accident, by being thrust into new roles and coping. It's called "career rotation," which sometimes means "twisting in the wind."

In research on IS dispersion for the Society for Information Management, I have found that the best firms *systematically* rotate people in and out of the IS function (along with marketing, finance and so on) on their way up the managerial ladder. These firms home-grow their IS managers just like all their other managers, so there's no magic here. It just takes a long time. You have to hire generalists, train them and hope they don't leave just when they're getting good.

It works best if it is a systematic program supported by educational and career management programs. Moving our banker into IS didn't work because it was a one-off effort with no real institutional support.

What kind of educational development is appropriate for an IS manager who may be a candidate for the top job?

Conversations with CIOs in companies and organizations with more than $500 million in revenue revealed these conclusions:

- Their senior IS managers need specialized training, combining business and IS issues. Each organization has anywhere from five to 30 people who could benefit. Some have MBAs; most of them don't.
- They don't want technical training. They get enough of that from vendors and consultants.
- They want updates on the latest concepts on the business side: finance, marketing, strategic planning and organizational behavior.
- On the IS side, they want ideas on managing IS issues: future technology environments, the latest in cost-benefit analysis, IS organization and staffing issues and managing high-performance teams.
- To sharpen management skills, they want training in leadership, motivation, negotiating contracts, listening and consulting.
- They can spare people for one week at a time, no longer.

Senior IS executives need new tools for focusing IS power on business strategy issues and some sharpening of management skills. The solution for creating the model CIO is neither Simonizing the humanist or humanizing the scientist, but hard work — training and development time — to create some good competitors for the top IS job.

Lodahl is Adjunct Professor at Polytechnic University in New York and chairman of Cognitech Services Corp. in Easton, Conn.

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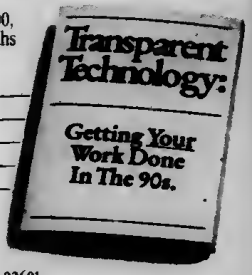

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FLEXIBLE MANUFACTURING

It's gotten easier to change on demand

BY TONY BAER

Manufacturers in the U.S. know from experience that one size absolutely does not fit all. They learned that lesson the hard way during the early '80s as the Japanese flooded the market with goods that not only were cheaper and better but also had more variations.

Flexibility — the ability to quickly produce wide varieties of products using the same equipment — has since become a prime watchword in the U.S. industry. A compact disc player featuring a strap handle today could easily have a plastic retractable handle tomorrow.

However, flexible manufacturing systems today are a far cry from the machines first installed in the 1980s. Those were highly complex, fully automated systems that people found difficult to operate and maintain.

Today's flexible manufacturing systems are usually made up of "cells," or clusters of simpler, less automated machines dedicated to a specific purpose. More importantly, they offer not only variation in actual manufacturing processes but also *flexible control*, or the ability to quickly adapt to changes in manpower levels, raw material characteristics, machine availability and, of course, customer demand.

Rather than appealing only to manufacturers with variable product lines, flexible manufacturing systems have become just as important to manufacturers with only one product line.

For example, a photosensor manufacturer on the West Coast that produced a wide variety of products regrouped its machines, which were scattered, into flexible production cells according to product family.

The company also reduced the number of its suppliers, adopted just-in-time methods to cut inventory and provided plant floor personnel with more information about the product they were assembling.

With all the changes, the plant cut its lead time from eight weeks to one, and switching gears between product orders was simplified.

At the other extreme, a Pennsylvania pet food plant with one major product found itself facing a sudden outburst of demand. It was able to keep pace by replacing its manual procedures for controlling individual processes with an integrated supervisory control system.

The control system eliminated the guesswork that occurred between each production step, thereby reducing scrap by 30% and boosting plant output. The new control system also made it easier to spin off variations of its product line.

Not all industries have the same flexibility requirements, however. For instance, a turbulent market demands that consumer product manufacturers be highly flexible. According to the industry publication *New Product News*, one out of every six items on supermarket shelves was introduced within the last 12 months. On the other hand, construction materials show less of a need for change.

Formula for flexibility

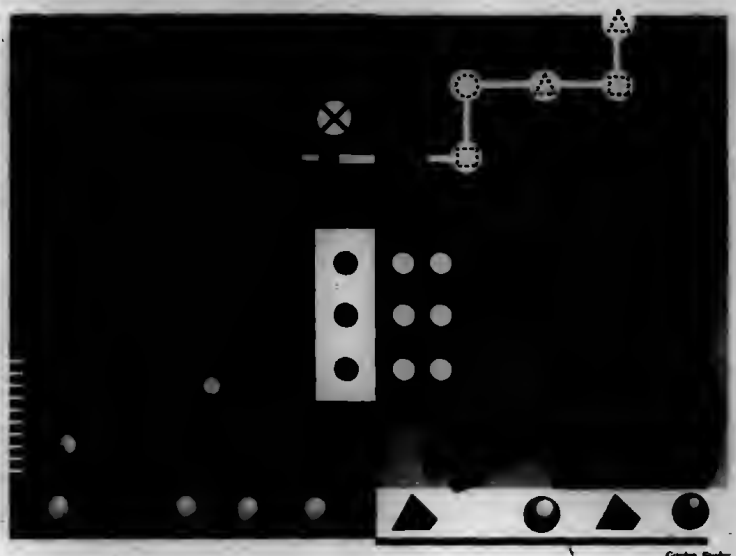
Virtually any computer-integrated manufacturing application — from manufacturing resource planning (MRP II) to computer-aided design, process optimization and statistical quality control — can play a part in making the plant more flexible.

In addition, there is no standard recipe for flexible manufacturing. But there are three products that make up the core of a flexible manufacturing system. The linchpin is the supervisory program, which runs on a personal computer, workstation or minicomputer. These are known as "cell control systems" in the discrete manufacturing world (where solid parts are fabricated, built or assembled) and "supervisory control systems" in the process manufacturing sector (where ingredients are blended, boiled, cooked, distilled, fermented or chemically reacted).

Depending on the plant or process type, supervisory programs are available off-the-shelf from independent software vendors, machine tool vendors or controller suppliers. Otherwise, they can be custom written by systems integrators.

As their names imply, supervisory and cell control programs

Continued on page 60



Gordon Studer

Baer is a senior contributor at *Managing Automation* and president of Business and Technology Communications in New York.

INSIDE

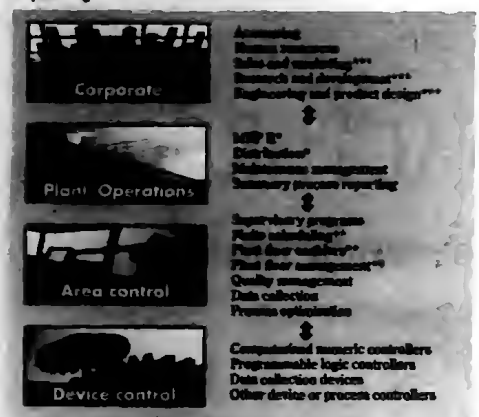
Check the Price Tag Flexibility doesn't usually come cheap. Page 60.

Scheduling Chaos Finite schedulers are filling in where MRP II cannot. Page 61.

Product Guide A comprehensive listing of plant management software. Page 64.

Corporate flexibility

No two corporations are alike, but a likely flexible structure might include the following:



Source: Business and Technology Communications CW Chart: Paul Mock

Continued from page 59

provide overviews and coordinate the activities of the plant or a portion thereof. Their job is to collect data on work in progress, prepare trend analyses and summary reports for managers and machine operators and transmit high-level supervisory instructions to local controllers that govern such things as machines, robots, cookers, blenders, reactor tanks and distillation columns.

These controllers translate the instructions into the digital or analog codes needed to operate the device or machine. Because many controllers are proprietary, they can pose integration problems.

The final component of the flexible manufacturing system is the factory floor network. These high-speed networks operate in real time to transmit data from the supervisory program to the machine itself. On a regular local-area network such as Ethernet, there is no guarantee that the instruction will reach its destination before the device or process fails. These networks are generally provided by the controller supplier.

There are numerous other applications that can play a supporting role in this threesome and many different ways to decide at which level of the organization or computing system each application is to be run (see diagram at left).

For instance, a relatively new type of software called a finite scheduler can adjust production schedules according to current demand and operating conditions. This can be valuable for companies faced with tight delivery and production schedules, many machines to choose from, many possible ways to order their sequence and a large number of staff deployments (see story page 61).

Complex capabilities

Another new category of software is plant floor management programs, which retrieve job instructions or complex machining instructions and track how well they were executed. Such functions are traditionally handled by MRP II packages, which store the instructions, and supervisory programs, which download the instructions to controllers on the plant floor. What plant floor management programs add to the picture is the ability to handle complex instructions in better detail (see story page 63).

An option that process manufacturers may want to consider is a distributed control system, which helps the supervisory program communicate more rapidly with the machines on the plant floor. Distributed control systems originated in refineries and large petrochemical complexes and are required at sites where hundreds or thousands of controllers are used to regulate fragile processes and where extremely fast, millisecond responses are necessary. These systems provide redundancy and millisecond real-time control capabilities not available from general-purpose computers running supervisory control programs.

In recent years, miniaturized versions of these systems have become available to serve smaller process plants producing differing products by the batch.

Smaller plants have other options as well. If your site does not need millisecond control, you can get by with real-time coprocessors plugged into the back of the supervisory computer.

One last category of tools may help bring down the last major hurdle to flexible manufacturing: the difficulty of integrating many third-party applications in areas such as quality control, data collection and process optimization. Traditionally, it has been up to the information systems staff or a systems integrator to write customer interfaces; more recently, several vendors have developed enabling tools that make these diverse programs compatible.

Such enabling tools have been developed by Digital Equipment Corp., Hewlett-Packard Co. and IBM. Mainstream Software Corp. — a cell control vendor — has developed similar enablers that work on platforms in the Unix environment.

Once flexibility is achieved in the plant, it can ultimately reach all the way to the corporate suite, where many organizations are also striving to be more adaptable to market conditions and customer demand. Through standard SQL links, different departments throughout the organization can begin pooling data on product development, pricing, delivery, customer service and market research. •

Count costs of flexible manufacturing

The paybacks of flexibility are great, but the price of implementation is high. The software itself is only the tip of the iceberg, and even that does not come cheaply.

The prime variables affecting software cost include the following:

- Whether you use the software only for data acquisition and monitoring or also for control.
- The number of peripheral applications you install, such as statistical quality control, process optimization and material tracking.
- The level of integration with a plant or corporate manufacturing resource planning system.
- The number of machines or processes covered by the system.
- The complexity of the operations covered.
- The degree to which drivers must be customized.

In discrete manufacturing cells, the cost of purchasing and installing supervisory programs may range from $10,000 to more than $1 million, depending on the degree of functionality, customization and product sophistication.

On the low end, Lotus Development Corp.'s manufacturing consulting service can install its 1-2-3 spreadsheet, complete with its @Factory module, and provide training and custom installation for less than $15,000. A maker of low-end PLCs can add a rudimentary supervisory control program for another $2,500.

On the high end, Andersen Consulting and Cimcorp, Inc. provide software and systems integration for sophisticated production cells comprising five to 10 machines, automated or semiautomated material handling systems, data collection systems and interfaces to finite scheduling and MRP II systems. Costs range from $500,000 to $2 million.

Costs vary similarly in the process world. Popular personal computer-based supervisory control packages such as Intellution, Inc.'a The Fix and U.S. Data Corp.'s Factory Link may begin at $3,000 to $8,000 for stand-alone systems. Networked versions for five or six users begin at $15,000 to $20,000. Multiuser Unix- and minicomputer-based systems begin at $40,000 to $50,000, with large installations reaching $250,000.

Distributed control systems, necessary for complex or high-speed processes, can add another $100,000 to $1 million to the picture.

TONY BAER

A checklist of key qualities defines the ideal supervisor

BY TONY BAER

When choosing a supervisory program, be sure to consider the following requirements:

- **Graphics displays.** Displays must be readable and easy to create, since neither the supervisor nor operator has time to translate a confusing layout.
- **Interfaces to specific controllers.** Every brand of controller uses a unique binary control language, so supervisory programs must include drivers for the major brands.

That's easier said than done, however; there is a wide variety of modular and proprietary controller hardware used on the plant floor.

In discrete processing, most machines use proprietary controllers, although programmable logic controllers (PLC) — digital controllers that turn machines on or off, regulate speeds and set positioning — have made major inroads. Most cell control programs include drivers for the most popular controller brands.

The situation is brighter on the process side, where PLCs and standard proportional-integral-derivative controllers — analog controllers that regulate temperature, flow or pressure — have staked a dominant beachhead.

Most supervisory packages contain drivers for the most popular PLCs and proportional-integral-derivatives.

- **Standard libraries of control functions or tools for creating them.** Control functions — or generic steps, such as lifting, assembling, cutting, cooking, blending and drying — are more easily defined in the process industries.

On the discrete side, even similar operations have significant variations. For instance, the control functions necessary for assembling windshields hardly resemble those for piecing together circuit boards. Some supervisory programs rely on custom programming, especially where highly customized machinery is used, while others feature high-level languages for object-oriented programming using graphical flow charts.

- **Robust databases that keep track of operating status.** In the process world, where events such as complex chemical reactions may happen in milliseconds, data is generally kept on memory-resident databases that refresh data only when it changes. Some systems update at regular intervals, an approach that may tax the system if the installation is large.

The requirements are looser in the discrete world, where it may take seconds or minutes to cut a piece of metal or assemble a door panel. If something goes wrong, two or three seconds' notice should suffice.

Therefore, many cell controllers are built around industry-standard relational databases.

- **Reporting capabilities.** Supervisory programs should contain a menu of standard reports and tools to prepare custom ones.
- **Alarm displays.** When a process is about to fail, the program must prominently flash a message pinpointing where the problem is occurring.
- **Multitasking capabilities.** Especially in the process industry — where events can happen in fractions of a second — the supervisory program may have to juggle alarm notification, reporting and dispatching of control instructions while also displaying current operating status. •

How to schedule in unexpected events

Employee absences, machine downtime and material delivery delays are usually considered outside the realm of manufacturing resource planning (MRP II) systems, which have historically been strong in long-range planning but ill-equipped for the idiosyncracies of everyday plant life.

Finite scheduling programs, on the other hand, dare to bring to the scheduling chaos not only order but also optimization.

Some of the newer systems can figure out how to best juggle work orders to minimize the setup procedure to readjust machines between production runs. Others can determine the most profitable job sequences to ensure that jobs are produced in order of priority.

In the last few years, roughly a dozen vendors have produced finite scheduling programs, some of which are stand-alone products and some that are modules to MRP II packages. Some cell and supervisory control suppliers, such as Cimcorp, Inc.'s Cimcell, are beginning to incorporate third-party finite scheduling products into their packages.

For such a young field, there are a lot of product variations. Some programs concentrate on scheduling individual production lines, while others operate at the plant level.

Other distinctions are based on the method of analysis.

Despite their capabilities, finite scheduling programs can't solve everything. "We don't shoot for an optimal solution, because we know that things are going to change, probably within the time that the computer is running," says Bill Schaeffer, vice president at finite scheduling vendor Pritsker Corp.

The costs of finite schedulers range from $10,000 for a module included with MRP II to more than $250,000 for the latest state-of-the-art package. ●

TONY BAER

TOP VENDORS:

Finite schedulers

Cell control

Supervisory control

Source: Business and Technology Communications
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Plant management systems use many aliases

BY BRUCE RICHARDSON

It's a lot easier to say "plant management system" than it is to define one. Even terminology differs: Vendors call it an area management system, factory control and management system, factory management and control system, factory floor management system and plant operations management system.

The basic function of plant management systems — which Advanced Manufacturing Research, Inc. (AMR) in Cambridge, Mass., terms "manufacturing execution systems" — is to link a corporation's planning and control layers, which roughly correspond to the operations and device-control levels, respectively, in the diagram (see page 61).

By linking these two levels, plant management software forms a new layer, the execution layer, giving operators and managers a current view of all manufacturing resources.

These systems can cut manufacturing costs by 45% to 55%, with payback periods of only three to 12 months. They don't come cheaply, however: Products in this market range from $10,000 to more than $1 million.

The plant management market is less well-defined than its planning and control counterparts. Manufacturing resource planning (MRP II) vendors such as Dun & Bradstreet Software, SAP America, Inc. and Ask Computer Systems, Inc. cover the planning function, while vendors such as AEG Corp., Allen-Bradley Co., Asea Brown Boveri Ltd., Honeywell, Inc., Mitsubishi Corp., Siemens AG and Yokogawa Corp. dominate the control function.

Consequently, a host of software suppliers have rushed into that space with "integrated plant management packages," which usually consist of four modules (see story below and chart page 64).

A variegated lot

However, there are at least a dozen other strategies for implementing a plant management system. Some users are working top-down by extending the reach of their MRP II systems by buying additional modules. They see the execution layer as an extension of planning.

Others are working bottom-up by building on top of their installed base of programmable logic controllers or process control systems. These users tend to be concerned with implementing a real-time information management system.

Still others are implementing just a piece of the plant management function, such as finite scheduling.

Another option is to build your own plant management software. If you don't want to start from scratch, you can build from one component.

As baffling as this product category is to define, it is proving itself popular. Plant management systems are the fastest growing segment of the computer-integrated manufacturing software market.

AMR estimates show these systems to be installed at nearly 2,000 sites, yielding a market of $350 million in 1990. The firm said it expects this market to grow by 25% to 30% in the next two years. •

Richardson is vice president of research at Advanced Manufacturing Research, Inc. in Cambridge, Mass.

Must haves

In an integrated plant management package, there are four critical modules:

• **Planning and scheduling.** This module includes scheduling, planning and dispatching of all resources. Planning data is usually gathered from an MRP II system.

One of the most desirable features is support for finite capacity scheduling. Whereas MRP II typically assumes infinite resources, finite scheduling is designed to provide the optimal schedule, given existing constraints in machine capacity, materials, labor and time.

• **Tracking, monitoring and control.** This component extends the reach of the plant management system. It tracks all plant resources, particularly work in progress, labor and equipment.

• **Quality management.** This includes quality data collection and display. Some systems also provide work instructions in compound document format for operators.

These work instructions guide the operator through the required steps and can also provide an audit trail to ensure that all of the steps and procedures were followed. This validation is particularly important in the pharmaceutical and aerospace/defense industries.

• **Computer-integrated manufacturing interface.** This module provides interfaces to other applications such as supervisory programs, maintenance management and decision-support tools, databases, computers, control systems and other plant devices, including bar-code systems and sensors.

BRUCE RICHARDSON

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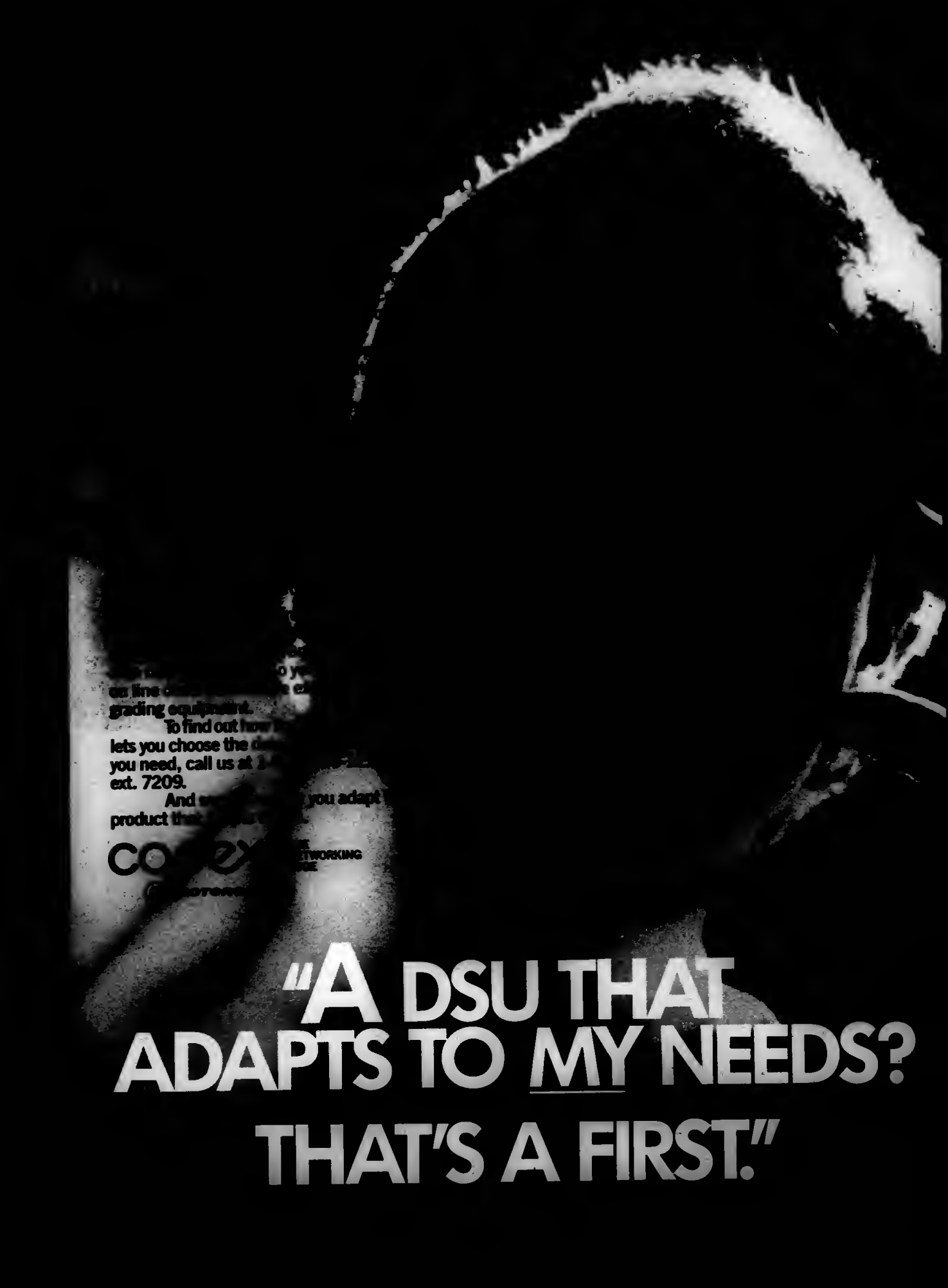
AT&T Manufacturing Systems (301) 771-3335	Shop Floor Data Collection System	AT&T's 6386 WGS, 6486 WGS/Unix System V	Discrete manufacturing	NP/ 1991	24M/ 600M	Interfaces to MRP, custom factory management system	Interfaces to PLCs and process control systems, labor tracking, machine utilization support, interfaces to bar code and factory data collection, displays electronic work instructions, work in progress tracking, DIE tracking, product and order tracking, efficiency reporting	Supports real-time SPC/SQC and lab information management system, long-term information management system	None	Oracle	TCP/IP, OSI	Available on request	Available on request/Yes
Automated Technology Associates (317) 575-8000	QTS Floor (Quality Tracking System)	DEC, HP, Stratus/VMS, VOS, HP-UX, Ultrix	Aerospace, commercial electronics, automotive, pharmaceuticals, consumer goods	NP	Application dependent/ 10M	None, but will interface with other application software	Inventory tracking, labor tracking, interfaces to bar code and factory data collection, traceability, work in progress tracking, defect tracking, real-time alarms, yield analysis	Supports real-time SPC/SQL	None	All	TCP/IP	Available on request	Available on request/No
	RQM (Real-time Quality Management System)	DEC, HP, IBM PC/AT, Sun/VMS, HP-UX, Interactive Unix, Sun OS	Aerospace, commercial electronics, automotive, pharmaceuticals, consumer goods	NP	Application dependent/ 10M	None, but will interface with other application software	Interfaces to PLCs and process control systems, cell control and supervisory control support, machine utilization support, interfaces to bar code and factory data collection, process monitoring, data acquisition, alarm management, exception reporting	Supports off-line SPC/SQC	Motif	All	TCP/IP	Available on request	Available on request/No
Battelle[2] and Hewlett-Packard Co. (614) 424-4815	Open CIM Factory Control System	HP's 9000 Series 300, 400, 800/HP-UX	Aerospace and defense, automotive, electronics	10/1989	Application dependent/ 10M	Via Pritsker Corp.'s Factor, interfaces to MRP, CAD; finite capacity scheduling, simulation, includes DMS by Sherpa Corp., CAPP Intellicapp by Cimtelligence	Via ICC's Shop Floor Data Manager, interfaces to PLCs and process control systems, inventory tracking, cell control and supervisory control support, labor tracking, machine utilization support, interfaces to bar code and factory data collection, displays electronic work instructions, includes Impression by Eyring Research Institute	Via RQM by ATA, supports real-time SPC/SQC, via RS/Series by BBN, supports lab information management system	Motif	Ingres, Informix, Oracle	TCP/IP	Available on request	$200,000+/ Yes
BBN Software Products (617) 873-5000	RS/Series	DEC, HP, Sun, IBM PCs/VMS, Unix, Ultrix	All manufacturing and R&D, focus on semiconductor and pharmaceuticals	10-20,000/ 1980	8M/ 20M (workstation)	Statistical analysis SQC, design of experiments	Interfaces to PLCs and process control systems, cell control and supervisory control support, interfaces to bar code and factory data collection	Supports real-time SPC/SQC and lab information management system, design of experiments, multiple regressions, data analysis	Menu driven	Oracle, Rdb, Ingres, RMS files	TCP/IP, Decnet	$2,000 - $100,000+	Platform dependent/No
Bradley Ward, Inc. (404) 396-4292	PMIS[3] (Process Management and Information System)	HP's 9000 Series 300, 400, 800/HP-UX	Food and beverage, pharmaceuticals, pulp and paper, specialty chemicals, electronics	120/ 1985	16M/ 400M	Interfaces to MRP, CAD; finite capacity scheduling	Interfaces to PLCs and process control systems, inventory tracking, cell control and supervisory control support, interfaces to bar code and factory data collection; displays electronic work instructions	Supports real-time SPC/SQC and lab information management system	Motif	Informix, Ingres, Oracle, Sybase	TCP/IP	Platform dependent	$15,000 - $80,000; $35,000 (average)/No
Cimcorp Factory Controls, Inc. (708) 851-2220	Cimcenter Shop Floor Management	DEC's VAX, RISC/VMS, Ultrix	Discrete manufacturing	NP/ 1991	32M/ 300M	Via Pritsker's Factor, interfaces to MRP, CAD; embedded finite capacity scheduling	Interfaces to PLCs and process control systems, inventory tracking, cell control and supervisory control support, labor tracking, machine utilization support, interfaces to bar code and factory data collection; displays electronic work functions	Statistical quality control	Decwindows, Vi Corp.'s Dataviews	Ingres	TCP/IP, Decnet	Available on request	Available on request
Cimflex Teknowledge Corp. (412) 787-3000	Delta Factory Management and Control Systems	HP's 9000 Series 800/HP-UX	Discrete, repetitive manufacturing	12/1987	32M/ 1G	Interfaces to MRP, CAD; work order management, changeover control	Interfaces to PLCs and process control systems, inventory tracking, cell control and supervisory control support, machine utilization support, interfaces to bar code and factory data collection, work in progress tracking, failure reporting and tracking, component traceability	Supports real-time SPC/SQC	JYACC's Formaker	Oracle	TCP/IP	Available on request	$380,000/No
Computer Decisions International, Inc. (313) 347-6900	Microshop	IBM, HP, Prime/AIX, Unix, Xenix	NP	150/ 1977	16M/ 300M	Interfaces to CAD; finite capacity scheduling, backward and forward loading	Inventory tracking, cell control and supervisory control support, labor tracking, machine utilization support, interfaces to bar code and factory data collection; displays electronic work instructions, fully integrated to purchasing and financial	None	X Window, Multiview	Basis	TCP/IP	$1,500 - $8,000	$60,000 - $100,000/ Yes
Consilium, Inc. (415) 691-6100	Workstream	DEC/VMS	Aerospace and defense, electronics, specialty chemicals	180/ 1983	32M/ 1.5G	Interfaces to MRP, CAD; finite capacity scheduling, simulation	Interfaces to PLCs and process control systems, inventory tracking, cell control and supervisory control support, labor tracking, machine utilization support, interfaces to bar code and factory data collection; displays electronic work instructions	Supports real-time SPC/SQC	Motif	None	Decnet	$3,000 - $80,000 (Microvax II), $13,750 - $412,500 (Vax 8978)	$100,000 (Microvax II)/No
Dun & Bradstreet Software (404) 239-2000	Factory Control and Management System	Tandem/Guardian 90	Electronics, aerospace and defense, automotive, heavy machinery, pharmaceuticals, consumer durables, packaged goods	6/1990	NA	Interfaces to MRP, CAD	Interfaces to PLCs and process control systems, inventory tracking, labor tracking; interfaces to bar code and factory data collection; displays electronic work instructions	Supports real-time SPC/SQC	Integrated with various graphics presentation packages	Tandem's Non-Stop SQL	TCP/IP, Decnet	NA	$300,000/No
Effective Management Systems, Inc. (508) 361-9400, (414) 359-9800	EMS Manufacturing System, EMS-SFIS (Shop Floor Information System)	DEC/VMS	All discrete manufacturing, hard goods in process manufacturing	600-700/ 1978	2M/ 400M	Interfaces to MRP, CAD; finite capacity scheduling, simulation, forecasting, rough cut capacity	Interfaces to PLCs and process control systems, inventory tracking, cell control and supervisory control support, labor tracking, machine utilization support, interfaces to bar code and factory data collection; displays electronic work instruction, real-time E-mail notification of problems	Interfaces with application software to support real-time SPC/SQC	EMS Worksheets, Cognos' Powerhouse, Powerplay	Rdb, RMS files	All DEC protocols	Priced by concurrent number of users: $3,000 - $5,000	$35,000 - $400,000/ $100,000 - $500,000 (SFIS)/No

[1]PLC — programmable logic controller. [2]Battelle is the Open CIM System Integrator. [3]PMIS is part of the FCS/9000 Factory Control System architecture from Hewlett-Packard Co.

The companies included in this chart responded to a recent survey conducted by *Computerworld*. When a vendor is unable to provide specific information about its product, the abbreviation NP (not provided) is used. When a question does not apply to a vendor's product, the abbreviation NA (not applicable) is used. Further product information is available from the vendors. DOS-based products have not been included in this chart.

VENDOR	PRODUCT	PLATFORMS SUPPORTED (HARDWARE/OPERATING SYSTEM)	VERTICAL MARKETS	NUMBER OF INSTALLATIONS/ DATE OF FIRST SHIPMENT	MEMORY REQUIREMENTS/DISK REQUIREMENTS (M BYTES)	PLANNING AND SCHEDULING CAPABILITIES	TRACKING, MONITORING, CONTROL CAPABILITIES	QUALITY MANAGEMENT	GRAPHICAL USER INTERFACES	RELATIONAL DATABASES INTERFACED WITH	NETWORK PROTOCOLS SUPPORTED	PRICE PER MODULE	AVERAGE SYSTEM PRICE/ HARDWARE INCLUDED
Fact, Inc. (518) 786-3900	The Factory System	IBM PCs and compatibles/Unix	Discrete parts manufacturing	25/1989	2M/ 60M	Interfaces to MRP; finite capacity scheduling	Interfaces to PLCs and process control systems, inventory tracking, labor tracking, machine utilization support, interfaces to bar code and factory data collection; displays electronic work instructions, work order tracking, manages resource utilization	Supports real-time SPC/SQC	Proprietary Windows, pull-down menus	Quantum Software Systems' Zim	Arcnet	$1,000 - $10,000	$150,000/ Yes
Factorial Systems, Inc. (512) 345-1192	The Paperless Factory System	IBM DAE, Tandem/Guardian, OS/2	Discrete manufacturing and assembly	9/1985	12M/ 60M	Interfaces to MRP; limited finite capacity scheduling	Interfaces to PLCs and process control systems, inventory tracking, cell control and supervisory control support, labor tracking, machine utilization support, interfaces to bar code and factory data collection; displays electronic work instructions	Interfaces to stand-alone package	Interfaces to DOS graphics	None	Token-ring, Tandem	$50,000 - $100,000	$300,000 - $1M/Yes
Heuristics, Inc. (916) 369-6000	Onspec	DEC's VAX, IBM AS/400 and PCs/VMS, OS/400, CDOS, OS/2	Process control and manufacturing	5,000/ 1983	8M/ 100M	Interfaces to MRP; simulation	Interfaces to PLCs and process control system, inventory tracking, cell control and supervisory control support, interfaces to bar code and factory data collection	Supports real-time SPC/SQC	Decwindows, Presentation Manager	None	TCP/IP, Decnet, Token-ring, Ethernet	$3,995+	$15,000/No
Hilco Technologies, Inc. (314) 298-9100	Monitrol/UX	HP's 9000 Series/Unix	Automotive, food and beverage, petrochemical, consumer products	497/ 1983	16M/ 330M	Interfaces to MRP; finite capacity scheduling, customer-specified	Interfaces to PLCs and process control systems, inventory tracking, cell control and supervisory control support, labor tracking, machine utilization support, interfaces to bar code and factory data collection; data acquisition, line performance production tracking, process optimization	Supports real-time SPC/SQC and lab information management system	Motif	Oracle, Allbase, Informix, Ingres	TCP/IP	$20,000 (base product)	$25,000 (software only)/ $60,000 (includes hardware)
IBES Corp. (314) 907-8475	Ibes Version 4.0, Integrated Financial, Manufacturing Distribution Software	Any platform supported by Informix	Distribution, discrete and discrete repetitive manufacturing	100/ 1988	4M/ 150M	Interfaces to MRP, CAD; simulation of material planning	Inventory tracking, cell control and supervisory control support, labor tracking, machine utilization support, interfaces to bar code and factory data collection, displays electronic work instructions	None	Motif	Informix SE or Online	TCP/IP, OSI	$2,000+ (price varies)	$90,000 - $250,000/No
IBM Contact local IBM sales office	POMS (Process Operations Management System)	IBM distributed architecture, featuring PS/2 and industrial computer/OS/2 Extended Edition	Chemicals, pharmaceuticals, pulp and paper, consumer goods	NP/ 1990	NP	Electronically links MRP, planning, and other business systems with process control and process operations	Interfaces to PLCs and process controls systems	None	Presentation Manager	None	NP	$6,300 per workstation (includes first-year maintenance)	NP/No
Intellution, Inc. (617) 769-8878	Fix DMACS for VMS	DEC's VAX, IBM PCs/VMS, OS/2, DAE	Food processing, metal processing	NP/ 1980	12M/ 9,500 - 19,000 blocks	Interfaces to MRP	Interfaces to PLCs and process control systems, cell control and supervisory control support	Supports real-time SPC/SQC	Decwindows, Presentation Manager	Oracle, Rdb, data can be exported to Ingres	Decnet	Available on request	Available on request/No
Intercim Corp. (612) 894-9010	Factory Net I/S	IBM PCs and compatibles/OS/2	Discrete parts manufacturing and batch manufacturing or assembly	100+/ 1986	2M - 6M/ 100M	Interfaces to MRP, CAD, electronic traveler, routing instructions	Cell control and supervisory control support, machine utilization support, interfaces to bar code and factory data collection, displays electronic work instructions, distributed numerical control, machine monitoring; interfaces to NC/CNC machines and robots	None	Windowing development package	SQLbase, IBM DB Manager	Netware, IBM LAN Manager, DAE, PC LAN, DEC's PCSA, Banyan, 3Com	$2,000 - $15,000	$160,000/No
John A. Keane & Associates (609) 924-7904	QMS Programs	DEC's VAX, IBM 370/VMS, VM/CMS	All manufacturing	72/1987	NP	Interfaces to MRP, CAD; simulation	Interfaces to PLCs and process control systems, cell control and supervisory control support, interfaces to bar code and factory data collection; displays electronic work instructions	Supports real-time SPC/SQC and lab information management system, supplier quality management, calibration, defect analysis, MIL-STD compliance	None	Proprietary, Rdb	None	$20,000 - $100,000 (DEC platform), $20,000 - $400,000 (IBM platform)	$75,000/No
Mpact Systems, Inc. (414) 792-3900	Inter Act	Tandem/Guardian	All manufacturing and distribution	NP/ 1987	NP	Via D&B Software's AMAPS, interfaces to MRP; via Boeing's PPDM, interfaces to CAD, finite capacity scheduling, simulation	Inventory tracking, cell control and supervisory control support, labor tracking; interfaces to bar code and factory data collection, displays electronic work instructions	Supports lab information management system	Boeing's PPDM	Tandem's Non-Stop SQL	TCP/IP Ethernet	Each module priced separately	$300,000 - $400,000/No
Peripheral Software Concepts, Inc. (314) 562-7000	Striped Lightning, Shop Floor Management Systems	DEC's VAX, HP's 3000/VMS, (data collection); HP/Apollo, IBM RS/6000 (finite scheduling)	Discrete manufacturing	75/1985	NA	Interfaces to MRP; finite capacity scheduling	Inventory tracking, cell control and supervisory control support, labor tracking, machine utilization support, interfaces to bar code and factory data collection; interfaces to payroll and SQC systems	None	Motif	None	TCP/IP, Decnet	$12,000	$75,000/No
Promis Systems Corp. (416) 960-0960	Promis (Process Manufacturing Integration System)	DEC's VAX, IBM/VMS, VM	Batch processing industry, semiconductor, electronics, pharmaceuticals	100+/ 1981	32M/ 4G	Interfaces to MRP; simulation, priority scheduling, line balancing	Interfaces to PLCs and process control systems, inventory tracking, cell control and supervisory control support, partial labor tracking, machine utilization support, interfaces to bar code and factory data collection; displays electronic work instructions, bill of materials	Supports real-time SPC/SQC and lab information management system via interface, calculations, data edit, lot size reconciliation	Proprietary, Macintosh	None	Decnet	$12,000 - $230,000	$400,000/No
Solerne Manufacturing Systems, Inc. (313) 641-0900	SPM+/Statistical Process Monitoring Software	DEC's VAX/VMS	Discrete and process manufacturing	60/1985	6K/ 70M	Interfaces with DEC's Basestar application integration platform	Interfaces to PLCs and process control systems, cell control and supervisory control support; interfaces to bar code and factory data collection, displays electronic work instructions	Supports real-time SPC/SQC	None	Rdb/VMS	Decnet	NA	$50,000 (includes maintenance)/No
Setpoint, Inc. (713) 584-1000	Setcim	DEC's VAX, HP's 9000 Series 800/VMS, HP-UX	Food and beverage, automotive, metals, electronics, discrete manufacturing	50/1986	10M/ 10M	None	Interfaces to PLCs and process control systems, cell control and supervisory control support, machine utilization support, interfaces to bar code and factory data collection; real-time graphic system, history of process operation	Supports real-time SPC/SQC	Decwindows	Rdb, Oracle	TCP/IP Decnet	$25,000 (Microvax II) plus $2,000 per screen	$60,000/No
Symix Computer Systems, Inc. (614) 885-0738	Symix	Over 200 platforms supported/Unix, Xenix, VMS	All manufacturing	900/ 1980	4M/ Varies	Interfaces to MRP; finite capacity scheduling, simulation, what-if, forward, backward and infinite scheduling, capacity planning, work center control	Inventory tracking; cell control and supervisory control support, labor tracking, machine utilization support, interfaces to bar code and factory data collection, displays electronic work instructions	None	None	Progress	TCP/IP, Decnet	Available on request	Available on request/No
U.S. Data Corp. (214) 630-9700	Factorylink	DEC's VAX, Decstation, HP's 9000 Series 300, 400, 800 IBM RS/6000, PCs and compatibles/VMS, Unix, OS/2, Desqview	Process control, SCADA	7,500+/ 1989	2M/ 5M	Interfaces to MRP, CAD; simulation	Interfaces to PLCs and process control systems, inventory tracking, cell control and supervisory control support, labor tracking, machine utilization support, interfaces to bar code and factory data collection, displays electronic work instructions	Supports real-time SPC/SQC and lab information management system	Decwindows, Presentation Manager, Motif	Oracle, Rdb, IBM Database Manager	TCP/IP, Decnet, OSI, Netware, Netbios	Available on request	Available on request/No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THAT'S A FIRST."

UNIX MYTHS DEBUNKED

When weighing Unix's pros and cons, it helps to have all the facts

David Perlstein

BY JOHN OZSVATH

Unix is gaining mythical stature as the golden system in which code never dies and computers get less expensive every day. It also looms large in the imagination as a demon of complexity.

There's a shred of truth in almost every myth. But for the most part, commonly held beliefs about Unix and its open systems status are false. These falsehoods need to be exposed so that information systems managers contemplating the Unix option can make a judgment based on the real pluses and minuses of the operating system. Unix deserves better than the half-truths that have caused some IS shops to avoid it.

MYTH ONE

Vendors set the standards, so you should wait to see whether Unix International or the Open Software Foundation wins the struggle to provide the "*standard*" Unix operating system before investing.

Reality: Vendors make products, not standards. Users make de facto standards by voting with their dollars. Waiting until one vendor establishes dominance before making any operating system choices does not make sense. In fact, a move to open systems may free your IS operation from dependence on a vendor's timetable; that's something we've experienced at McDonald's Corp. since we began using Unix.

When users — specifically private corporations and government agencies — adopt formal standards, there is pressure on vendors to adopt these standards in place of proprietary options. The government put such pressure on vendors when it mandated Posix compliance for certain specified volume purchase agreements. One way to protect your IS interests and influence the outcome is by joining a standards committee or user group (see story page 69).

MYTH TWO

Unix is so hard to learn that you have to be a rocket scientist to use it.

Reality: How true this myth is depends on who is saying it. A beginning programmer may say Unix is hard to learn. I would agree that when you take away some of the recent layers of programs that shield end users from the complexities of Unix, it can be somewhat intimidating. However, the fact that scientists were the original users of Unix says more about AT&T's licensing policy than about the required IQ level.

From a commercial user's standpoint, I don't know any large IS department that is afraid of learning Unix. It takes work and time to learn it — or any other operating system, for that matter. At McDonald's, we experienced a typical learning cycle with Unix. We began by teaching ourselves, then took a vendor's training program. Members of our project team became competent users in about one year.

For an end user, using Unix through graphical user interfaces and other available tools is like running DOS under Microsoft Corp.'s Windows. At McDonald's, we don't tell end users they are using Unix, and they don't complain about it.

MYTH THREE

Unix software is completely portable.

Reality: My systems development group says, "Unix is fuggable not portable."

Unix applications are portable when they conform to industry standards that are common to all platforms, such as Posix. The key is understanding the portability requirements thoroughly and avoiding the use of any superset of the system (however attractive) that restricts you to a particular vendor's version of Unix.

In the past, there have been differences in tools that made seemingly portable ones behave a little differently on each platform. As a result, the application interface needed to be tweaked on each platform. Database management system tools, which are often highly optimized for performance, have had particular problems with portability under different implementations of Unix.

MYTH FOUR

Unix programmers are flaky, scarce and expensive.

Reality: Stereotypes aside, we all know that any group of people has some flakes. But scarce? If you're near a large city or a large university, it is substantially easier to find Unix-capable IS people. If you're not, it is more difficult.

However, that is usually the case with any IS hire, not just a Unix hire.

In some remote places, you can expect to pay more for Unix/C professionals than for Cobol professionals. However, I believe that this pay differential is more than balanced by the savings realized by developing applications under Unix on supermicrocomputers. Such applications development is, in most cases, significantly less expensive than it is when working on a mainframe. How much less depends on the application being developed.

With the fourth-generation development tools available under Unix, applications can be developed faster as well. At McDonald's, we have had good results with fourth-

Continued on page 69

Ozsvath is director of systems development at McDonald's Corp. in Oak Brook, Ill., and the 1990-91 president of Uniforum, the international association of Unix and open systems users.

- **Seven myths debunked**
- **The Ballantine Beer approach to integration**
- **How you can have a say in Unix issues**

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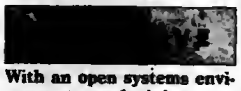
Continued from page 67

generation languages (4GL). The level of productivity improvements from them depends on how compatible the application is with the 4GL selected.

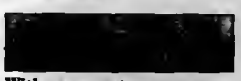
You can therefore afford to spend more on staffing because Unix platforms and open systems help control your hardware costs. Moreover, developing for open systems encourages staffs to think in terms of modular design and reusable routines (a trick that mainframe developers are relearning from personal computer programmers). If your programmer isn't spending time writing redundant code, you save the cost of doing it over.



With an open systems environment, you don't have any clout with a vendor.

Reality: Nothing could be further from the truth. Designing an open systems environment gives you leverage and clout with vendors. There are now a number of comparable alternatives from which to choose. Because of this variety, each vendor must differentiate itself through price/performance.

Moreover, vendors must especially demonstrate how attentive they are to your needs, how they will follow up and how they will deliver. That, in my mind, becomes the new bottom line in the relationship.



With open systems, you can plug anything into anything.

Reality: Not yet. Universal connectivity may be the goal sometime in the future — but without open systems standards, there is not a prayer of it ever happening. There are too many variables (see story below).

Unix is not a secure system.

Reality: There is more truth in this than in the other myths. The slow move toward standards in the security area is a major obstacle for commercial users. Maybe it's an oxymoron — you can't have open systems and security at the same time.

In cases in which it's unwieldy, security can actually be a problem, however. The lack of interoperability among security systems is one of the biggest deterrents to distributing applications in a multivendor environment. It's frustrating for users to sign off and on or change passwords to move from an application on one platform to an application on another.

Having said that, I want to underscore that Unix is further along in offering transparent security to users who need to access both local and remote applications than many proprietary operating systems are. It is definitely ahead where multivendor solutions are required.

For example, Unix security's layer approach uses the system's machine and file-level access codes. Specific applications can offer additional security implementations. This setup provides greater flexibility in implementing data security.

Proprietary operating system security, on the other hand, may be different from machine to machine, with specific users controlling access to files.

McDonald's has a corporate goal of allowing anyone in the company to access any data for which he is authorized, regardless of where it is located. Achievement of this goal cries out for open systems standards.

.....

The myths I've sought to debunk here are at the root of many misconceptions about Unix. The next five years, however, will see the eradication of these myths as development moves off the mainframe and into distributed environments.

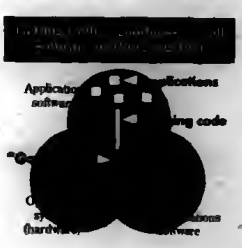
When you distribute applications and databases, there is an obvious benefit to having them all function under the same operating system. Unix increases this benefit by running the same way on a desktop system as it does on a processor that supports 100 users.

The move to Unix is already happening on the desktop. According to Dataquest, Inc., in 1986, business, government and schools around the world each spent less than $1 billion on Unix applications software. Projections are that by 1992, businesses will spend about $7 billion, government more than $5 billion and schools about $3 billion. And that's no myth. •

The place where 'goodness' resides

One way to grasp the difference between trying to integrate business systems in a proprietary environment and attempting the same thing with open systems is to draw a picture. The image I like to use is a three-circle design (see diagram below) that I call the Ballantine Beer approach because I borrowed it from the brewer's logo.

Our job as information systems managers is to make the three business software circles — application software and packages, data communications software and operating systems software — work together. (The latter area includes hardware, except in the case of Unix, because of the dependency between machines and the operating systems they run.)



We want our companies to be at the intersection of the three circles because that's where the "goodness" resides. Goodness is the ability of applications to fit seamlessly, without IS having to do any work or rework to get them that way.

Change any one of the circles, and the cost of integration comes into play. When the business requires an application that is not compatible with the operating system or data communications software, IS has to spend the money to bridge the distance between the circles and bring this software into the intersection.

Ongoing maintenance adds to that cost, because if anything changes in any one of the three circles to affect the bridging code, IS must accommodate that change.

Proprietary vs. open

Integration is simple in a proprietary environment: The vendor makes sure all three circles work together.

However, if the business needs a software package that runs on another hardware platform, IS has a problem. It must either wait until the proprietary vendor makes that particular application available or find someone (possibly itself) to make it work.

With open systems, the intersection of the three circles is governed by standard interfaces and protocols and not by the hardware.

For example, if Unix is running in the application software circle, Transmission Control Protocol/Internet Protocol (TCP/IP) occupies the overlap between the data communications and operating system areas.

If a Unix application that requires TCP/IP satisfies portability requirements, then all three domains will work smoothly together. IS can change the hardware or distribute the processing differently without changing a single line of code.

However, even in an open environment, if one more variable comes into play, then IS faces integration work, although I would argue that it is less drastic than on proprietary platforms.

Take, for example, a business that needs a DOS application running under Microsoft Corp.'s Windows. Some vendors enable DOS to run under Unix, so the operating system and application circles intersect smoothly. But Windows doesn't run as smoothly under TCP/IP, so the data communications circle is out of sync.

There are basically three choices for IS in this situation: Rewrite the code to make it run better, run it on personal computers and find another way to hook it up through gateways or forego the opportunity.

Scattered

Today at McDonald's, we're all over those circles. Some programs were written using the open systems standards in place at the time. Others are way out at the edge of the application circle and take a lot of maintenance.

Our goal over the next five to 10 years is to bring them all into the goodness center.

We're willing to write bridging code over the short run, if necessary, because there still are not open systems standards for every occasion and need. As open systems standards mature, the necessity for bridging codes fades.

JOHN OZSVATH

Would-be Unix movers

There are a number of routes available to Unix users who want to influence the pace and direction of standards development. These include the Uniforum users group, X/Open Consortium Ltd., Unix International and the Open Software Foundation.

The Uniforum Technical Committee, for example, proposes specifications to the Institute of Electrical and Electronics Engineers, Inc. in a number of emerging Unix and Posix areas. It has several technical subcommittees, as follows:

- Internationalization, which coordinates work on the different linguistic and cultural requirements of portable operating systems in other countries.
- Security, which has worked mostly as an educational body since its proposed standards for the U.S. Department of Defense and commercial environments sparked the formation of the Posix.6 Working Group.
- Performance Measurement, which serves as an advisory group on benchmarking and provides input to standards bodies.
- Realtime, which jointly operates with the Posix.4 Working Group to explore and evaluate real-time extensions to the Posix standard.
- C++, which discusses object-oriented programming issues related to the C++ language.

To join one of these subcommittees or receive further information about the other Unix-related organizations mentioned above, contact Ralph Barker, Uniforum director of technical services, at (408) 986-8840.

JOHN OZSVATH

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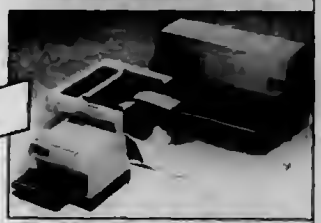
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Author

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International Business Machines Corporation

James E. Clark
AT&T Computer Systems

Samuel H. Fuller
Digital Equipment Corporation

John Markoff
The New York Times

WEST COAST TEAM

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Metaphor Computer Systems

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NATIONAL
BRIEFS

Two-time Nobelist dies

▶ **John Bardeen**, who won the 1956 Nobel Prize in physics for his co-invention of the transistor and shared the signal honor a second time in 1972 for his research into superconductivity, died of a heart attack Jan. 30 at the age of 82. Bardeen came from an academic family and devoted much of his life to teaching engineering and physics at the university level. He also won such honors as the Presidential Medal of Freedom and the Soviet Academy of Science's Lomonosovcq Prize for his work, which revolutionized technology.

Out of the Blue

▶ Berkeley, Calif.-based **TRW Financial Systems, Inc.**, purveyor of image-processing systems to paper-intensive corporations, late last month backed away from a co-development alliance with **IBM** that had been announced this time last year. Instead of developing image-based lockbox and remittance products for IBM platforms and Personal System/2-based banking software, TRW Financial Systems, a subsidiary of TRW, Inc., intends to target custom image-based systems at organizations with specialized processing requirements.

Market player

▶ Milwaukee-based **Fiserv, Inc.** advanced its campaign for player status last week in the large commercial bank outsourcing market with the pending acquisition of the principal financial data processing business units of Stamford, Conn.-based **Citicorp Information Resources, Inc.** The move gains Fiserv in-house processing and software systems tailored to the needs of commercial banks and credit unions.

I want my HDTV

▶ The industrial and academic worlds are joining forces to provide the **Federal Communications Commission** (FCC) with a sweeping array of high-definition television (HDTV) technology. Through a joint venture to be known as the American Television Alliance, San Diego, Calif.-based **General Instrument Corp.** and **MIT** will develop all-digital, simulcast HDTV systems to be submitted to the FCC for possible selection as the U.S. standard.

Quality: Take it to the limit

At IBM Rochester, improving product quality is a matter of give and take

BY MICHAEL FITZGERALD
CW STAFF

ROCHESTER, Minn. — Steal shamelessly when it comes to quality.

This is a *guiding principal* throughout IBM, the company says, but nowhere is it better demonstrated than at IBM's Rochester site, home of the Application System/400 and also a major manufacturer of IBM storage devices. In fact, according to the U.S. Department of Commerce, IBM Rochester's adherence to this maxim and its skill in implementing the good ideas it appropriates were critical in winning it the coveted Malcolm Baldrige National Quality Award this past fall.

Take what you can get

"The policy is to share successful strategies among companies — 'steal shamelessly' is a phrase a lot of people use," said Curt Reimann, the National Institute of Standards and Technology's associate director for quality programs, who oversees the Baldrige competition. "The companies all have great ideas, and they each have ways of taking ideas and converting them for their own environment. It is a central purpose [of the Baldrige awards] to foster that and to create a climate for doing that."

IBM Rochester implements the ideas it finds both within IBM and elsewhere at places such as Motorola, Inc., Xerox Corp. and Milliken & Co.

Now, following what has become a Baldrige winner tradition in the four years since the award's establishment, others will come to Rochester to see what they can "steal" from IBM.

Ironically, IBM Rochester almost skipped the Baldrige competition in what turned out to be its winning year. Only one year ago, the plant's top managers gathered here to make what would be their biggest decision for 1990: whether to reapply for the Baldrige award after being eliminated in the final round the year before.

"There were a lot of dissenting opinions," said Larry Osterwise, who was then general manager at IBM Rochester, the largest IBM plant under one roof. Osterwise, who last month was named vice president of IBM's U.S. market-driven quality and assessment group and was succeeded at Rochester by general manager Robert Unterberger, said the site's managers agreed that the Baldrige application process had been worthwhile. However, he said, they were worried about what it might do to morale if they tried and lost again.

"We finally all said, 'Look, we're going to have to become a little mature about this,' " Osterwise said. "We're doing this because we'd like to win an award, but the primary reason is because we want to learn about ourselves. So if we lose again, we'll get over the disappointment. We'll just be that much better."

Successful quest

So a quest was renewed from within the 3.6 million sq-ft structure that spreads like the northern plains from which it rises in a locale known for the Mayo Clinic and far from the near-hallowed grounds of computing in the U.S. This time, the pursuit was met with success: IBM's Rochester plant received the Baldrige trophy at an official ceremony Dec. 13.

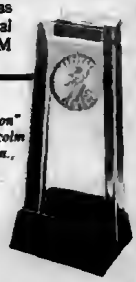
Management writers, including Tom Peters and Robert Waterman, have long ballyhooed IBM's ability to create an atmosphere that allows its employees to behave like entrepreneurs despite its huge size. That reputation suffered during the late 1980s, however, as IBM stumbled financially and was frequently accused of having lost touch with its customer base.

That may explain why Rochester's management demurred when IBM asked them to represent the company in the first Baldrige competition in 1988, but

Continued on page 73

Stepping up the quest for quality

In search of "undisputed leadership in customer satisfaction" and guided by the qualification requirements for the Malcolm Baldrige National Quality Award, IBM's Rochester, Minn., site – the home of the AS/400 – shifted from technology-driven to quality-driven corporate culture. Last fall, the site also brought home the Baldrige award



1986 to 1989	IBM Rochester claims a 30% overall productivity improvement and a threefold increase in product reliability
1986 to 1990	An estimated $300 million invested by IBM in improved processes and information systems yields a 75% decline in capital spending on defect detection equipment and a 55% drop in write-offs as a proportion of manufacturing output
1989	As a direct consequence of IBM Rochester's investment of some 3% of its payroll in education and training, about 33% of the site's employees move into new positions, almost half of them promotional
1990	IBM Rochester, having been a runner-up in 1989, becomes the first computer company to win the Baldrige award

Source: IBM — CW Chart: Paul Mock

Ask exec outlines new game plan for Ingres

BY JEAN S. BOZMAN
CW STAFF

MOUNTAIN VIEW, Calif. — Ask Computer Systems, Inc. has an "action plan" to bring its new Ingres database division into step with the approximately $400 million business, top Ask executives said last week.

The plan was designed to change Ingres' former strategy of shadowing large relational database management systems rival Oracle Systems Corp., according to Eric Carlson, Ask's executive vice president of product operations. Carlson, one of three Ask executives reporting directly to Chief Executive Officer Sandra Kurtzig, is in charge of all research, product development and manufacturing at Ask.

"When you're second in a sailboat race, you don't take the same tack as the leader, especially if they're heading *into a storm*," Carlson explained, referring to Oracle's current financial troubles.

Ask's Carlson *puts database plan into action*

Instead, Ask intends to "grow" Ingres' database market share through a network of business partnerships with major systems vendors, including Hewlett-Packard Co. and Digital Equipment Corp.

Ask is also requesting that some systems vendors, such as Pyramid Technology Corp., help underwrite the cost of "porting" to the Ingres database. This will relieve some pressure on Ingres' 300-person product development team, according to Carlson.

Meanwhile, he said, Ask's Application Product Division will be fashioned into a 200-person "software factory" that turns out ready-to-use software applications for open systems Unix machines and proprietary DEC, HP and IBM Application System/400s.

"We are modeling ourself on Microsoft Corp., which is a company that partners very well, sells much of its product through indirect sales channels and delivers a complete set of tools and applications for its market [of desktop computers]," Carlson said.

Recently, Carlson said, he has spent two days of every week overseeing the Ingres division's business plans and reducing the overall number of commitments to support multiple versions of its DBMS and software tool products. Prior to its October 1990 acquisition by Ask, Ingres had made commitments to maintain 47 different "ports" — a lineup second only to Oracle's 80 hardware platforms.

Open environments

Now, Carlson said, Ask will support nine standard "open systems software environments," which together account for the majority of hardware platforms.

Ask will arrange with systems vendors to share responsibility for supporting platforms not covered by open systems.

No Ingres products will be abruptly discontinued, Carlson said. He added that some will be placed on a "sunset" program for eventual termination, but he declined to cite examples.

Opus picks Sun and Motorola for RISC architecture

BY J. A. SAVAGE
CW STAFF

MOUNTAIN VIEW, Calif. — Most reduced instruction set computing (RISC) companies have set up camp in one of five currently competing architectures. However, Opus Systems, an 8-year-old former add-in board company turned systems vendor, is hedging its bets.

Opus has opted for two RISC architectures: Sun Microsystems, Inc.'s and that offered by Motorola, Inc.

In fact, the firm is keeping its options open in more ways than one. In addition to its two-RISC strategy, it has a no-RISC alternative: Opus offers complex instruction set computing (CISC) systems based on Intel Corp.'s CPUs.

Opus' Series 400 Personal Mainframe is based on Motorola's 88000 RISC processor. Its Personal Mainframe 5000 is based on Sun's scalable processor architecture (Sparc). Its Personal Mainframe/8100 and 8200 family uses Intel's 80286 and 80386 processors.

"The [divided allegiance] has its good and bad sides," said Laura Segervall, an analyst at San Jose, Calif., market research firm Dataquest, Inc. "If one or two processors make it in the market, that's good, but it makes you divide your resources."

In marketing its Sparc-based systems, Opus appears to be using a game plan now viewed as traditional in the IBM plug-compatible mainframe market: It is offering its 12.5 million instructions per second workstations at 20% less than Sun's wholesale price.

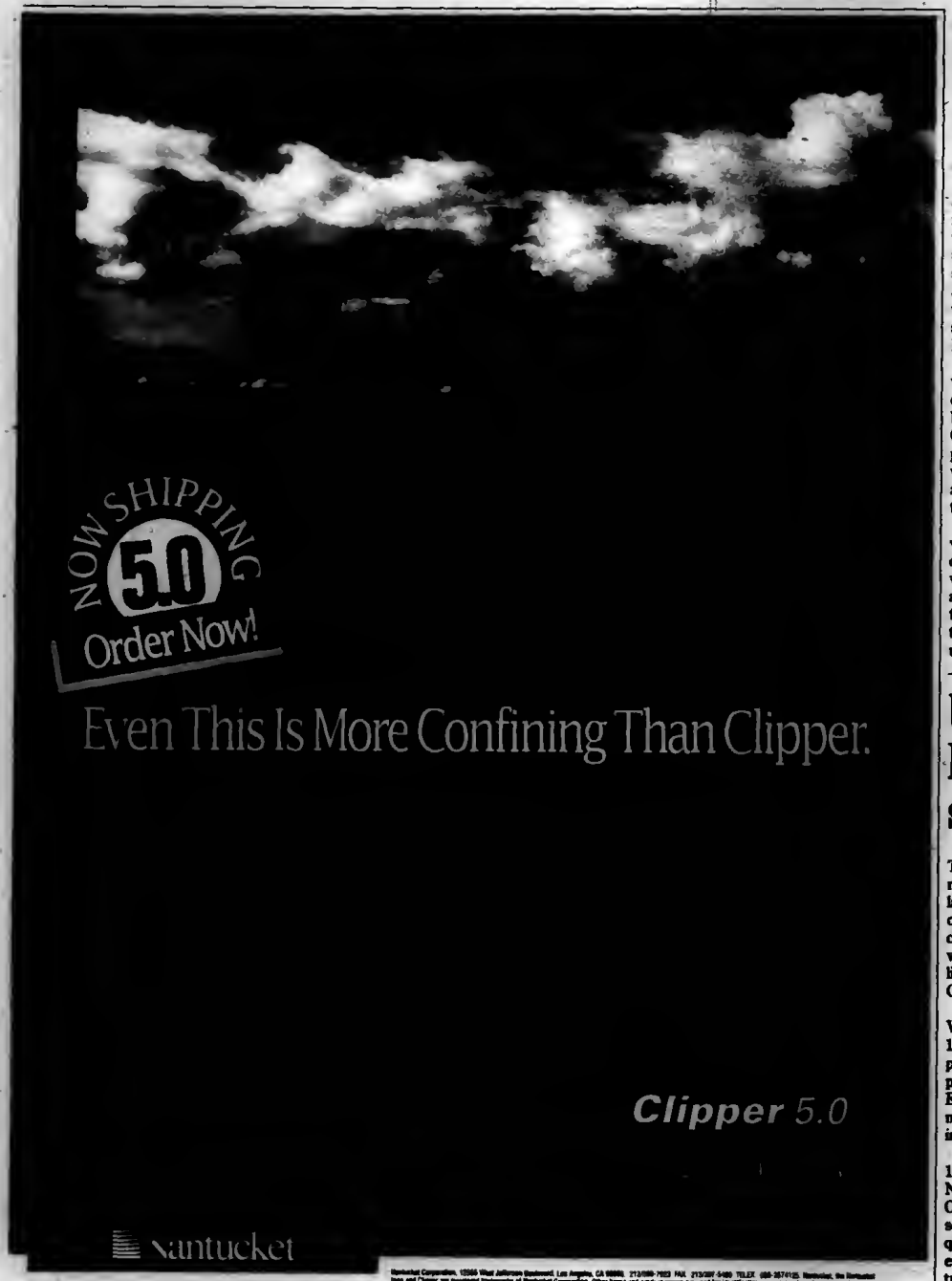
Because Motorola and Intel produce components rather than systems, no such price comparison tactic applies when it comes to selling wares based on their architectures.

Ensuring high volume

In addition to selling Sparc-based systems, one of Opus' side businesses is attempting to ensure that Sparc remains a high-volume RISC architecture. Opus is spreading the availability of Sun's Sparc by providing hardware developer kits through its silicon partner, LSI Logic, Inc. in Milpitas, Calif.

"Twelve of the 15 vendors who unveiled Sparc-based machines at fall's Comdex were based on Sparc kits designed by Opus," said Tom Lacey, vice president of marketing. The kits were developed with LSI Logic as the silicon partner, according to Opus.

Despite its attempts to advance the Sparc market, and conceding that Sun has better volume than Motorola in RISC architecture, Opus will continue to offer the Motorola-based system "because it's a better multiuser chip," Lacey said.



Utility sues NCR, claims system failed

The Cleveland Electric Illuminating Co. has filed a $2 million lawsuit against NCR Corp., charging that NCR's turnkey computer-aided dispatch system was inadequate to meet the public safety needs of Lake County, Ohio.

The county purchased the V8555-based system in the late 1980s but allegedly had many problems with it and later replaced it with one from Digital Equipment Corp. NCR has filed a motion to stay the lawsuit pending arbitration of the dispute.

A similar case occurred in 1988, when a dispute between NCR and the city of Portland, Ore., over the same system was settled out of court at NCR's request. In that case, the computer-aided dispatch system contracted for use was never delivered, and the city had to upgrade its old system.

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INTERNATIONAL
BRIEFS

The high price of DRAMs

► European personal computer manufacturers that have enjoyed relatively inexpensive Japanese dynamic random-access memory chips during the last year may be in for a period of belt-tightening. According to market research firm **Dataquest, Inc.**, a 10% to 15% price hike is expected in Japan's DRAM market during the course of this year. The cost of Japanese DRAMs is controlled by a complex pricing structure related to individual prices from the country's 11 major chip producers. The 1991 increase is not dramatic in itself, Dataquest analyst James Eastlake told *PC Business World* in London, but it looms large in relation to last year's bargains.

Software en Espanol

► **Andersen Consulting** is at work on the design for a building that it hopes will house the first software factory in Spain. Andersen executive **Pablo Navarro** told the Spanish business press that his firm wants the factory to introduce "the concept of manufacturing activity in the development of information technology products." He added that Andersen will rely on computer-aided software engineering tools and software to help it achieve its goal.

Vive la HDTV

► In a deal reportedly worth about $16 million in subsidies, Netherlands-based **Philips Telecommunications N.V.** has announced it will set up Europe's first major high-definition television (HDTV) tube-making center in Dreux, France, at a site that reportedly was in danger of being shut down. France will invest some $10 million in the Philips Components manufacturing unit's research and development efforts. Because this amount will be subsidized by regional administrations, Philips is looking at commitments in the $16 million neighborhood.

The chosen few

► The **Swedish Agency for Administrative Development**, currently evaluating PCs for networking applications, will soon announce the five firms it has chosen to recommend as "authorized" PC vendors to the Swedish government. When the list comes out, however, IBM's name will be among the missing. According to sources within IBM Sweden, the agency decided to eliminate Big Blue from the testing because of the price involved.

When opportunity knocks . . .

► French state-owned **Thomson Consumer Electronics** is taking advantage of the promised post-1992 deregulation of the European Community telecommunications equipment markets with a plan aimed at giving the firm a 10% share of the European telephone terminal market by 1995, according to a report in the British financial press last week. The report said Thomson will kick off its European campaign in the summer of 1992 and will place a $30 million development budget at the project's service during the next three years.

Quality

CONTINUED FROM PAGE 71

management says that the complexity of shifting from System 36 and System 38 production to AS/400 production was the key factor, along with what Robert LaBant, vice president and general manager of Application Business Systems at IBM, called an inability to "appropriately answer some questions."

LaBant acknowledged that seeking the Baldrige award "has changed us." Going through the qualification process, he said, introduced an increased emphasis on benchmarking of department results against those of similar departments at competing firms.

The race for the award also inspired IBM Rochester's closed-loop, in-house communications process, which allows for more efficient and effective interaction between the site's market planners and customer service staff, LaBant said.

Building from the top down

IBM Rochester's drive for quality, as measured by customer satisfaction, is a top-down effort, LaBant said. After reading a newsweekly's account of complaints from a less-than-ecstatic AS/400 user, he said, he called the user to discuss the issues — and then called Rochester to find out how the paper knew about a user problem of which he was not aware.

One of the things the Baldrige judges noted about IBM in 1989, the year it missed winning the award, was a tendency to reward individuals for their own performances rather than that of their team, Osterwise said. The IBM Rochester crew took the teamwork observation to heart. LaBant told his top managers that they would receive bonuses as a team according to how satisfied customers were with the AS/400. This policy of rewarding the team as well as individuals spread throughout the Rochester plant.

"The real benefit for us is the intense and grueling self-assessments that resulted in changing our jobs," LaBant said.

Improving quality and keeping the customer satisfied have become the buzzwords for all employees at IBM Rochester, and they seem to be developments that are paying off for IBM.

EDUCATION
DEVELOPMENT
FOUNDATION

The East-West Education Development Foundation, a not-for-profit foundation, is seeking donations of surplus personal computers and peripherals for placement in educational institutions in the USSR and Eastern Europe. The goal of the Foundation is to introduce information technology into the educational system of those countries evolving toward a democratic, free market society. By educating the students on the power of information technology, they will be better equipped to compete in the global market of tomorrow.

Information Technology Vendors:
Excess inventory donated to the East-West Education Development Foundation may earn an additional tax deduction*, as well as build market share for your brand in emerging markets.

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*Under IRS Section 170(e)(3), corporations which donate their inventory (property sold in the normal course of business) to certain charitable educational organizations, receive an additional tax benefit. The deduction will be the total of (a) the donor's tax basis in the donated inventory, plus (b) one-half of the difference between the inventory's tax basis and its fair market value; (c) any incidental costs associated with donating the inventory, such as shipping, postage or warehousing.

Firm cashes in on winning ways

BY MAURA J. HARRINGTON
CW STAFF

SAN JOSE, Calif. — Banking on a strategy of selling its products before they are developed paid off for Conner Peripherals, Inc. last month when the firm reported record sales for its fiscal year that ended Dec. 31, 1990.

Conner, an OEM of software-driven 2½- and 3½-in. hard disk drives, has operated at a profit at all times in its four-year history, Chief Financial Officer Carl Neun said.

Reported sales for 1990 totaled $1.34 billion, up 90% from $704.9 million in 1989. Net income for the year was $130.1 million, up 213% from $41.5 million one year ago, Neun said.

"I think the increase in sales and income is a continued measure of our basic strategy, which is to sell the product to our customer first and then design it and finally, to build it last," Neun said.

Conner's rapid growth rate earned the company a spot on the New York Stock Exchange last October, and its continued growth has proven it can handle the market, analysts said.

However, Neun acknowledged, "You can't double forever. Clearly, we'd like to continue to grow the company as fast as we can, but we are subject to the cyclical trend of our customers."

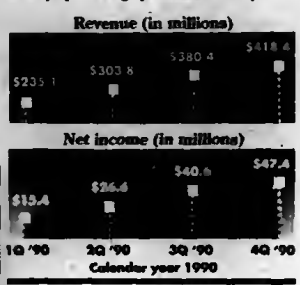
While the company's goal is to reach the "$2 billion range" in total sales by the end of 1991, Conner will be extra cautious during these recessionary times, Neun said.

Widespread caution may already be showing up indirectly in Conner's financials, Neun noted. Sales to Compaq Computer Corp., Conner's biggest customer, accounted for 18% of total sales during the recently closed fourth quarter, down from 20% in fourth-quarter 1989. In 1990, sales to Compaq were down 10% from 1989, he said.

"I think everyone is trying to run their business very prudently under the circumstances," Neun said. Compaq's Wayne Collins, vice president of materials operations, said Compaq has always had a good working relationship with Conner. A Compaq spokesman confirmed that Compaq was one of Conner's initial investors in 1986.

Conner Peripherals, Inc.

Its sell first, build last strategy fueled the disk drive player through yet another boom year



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IBM Business Partner

AT&T systems work goes on

BY MICHAEL FITZGERALD
CW STAFF

Maligned, excoriated and all but written off since AT&T began its $6.12 billion attempt to "give" its computer operations to NCR Corp. in late December, AT&T's Computer Systems Division is attempting a "business as usual" facade.

So far in 1991, the Computer Systems Division has announced two sales to corporations, a reseller's agreement with Milwaukee-based computer reseller Computer Bay, a franchise of Computers Unlimited of Wisconsin, Inc., several product enhancements and three strategic agreements with other vendors. This is a high level of activity for the Computer Systems Division, according to company executives, and it is not at all the behavior one would expect from an operation that all sides said is about to be dismembered.

Bill O'Shea, the division's vice president of systems marketing and development, acknowledged that the current spate of activity is motivated in part by the desire to keep AT&T employees occupied. However, he added, it will also function to keep them fresh for service in the newly merged organization.

"When you're a company contemplating a takeover, you don't put the business on hold and let things stagnate, even though things may change vastly after the fact," said Robert Kidd, midrange analyst at Dataquest, Inc. in San Jose, Calif.

Yet O'Shea said that the move by AT&T to acquire NCR has employees "certainly more aware of what's available outside of the Computer Systems Division" than they were before. However, there is not a mass exodus under way, he said.

AT&T has said that most of NCR's top management will stay with the company if the merger is completed, according to spokesmen. Also, AT&T told Computer Systems Division employees who are not retained that it will find places within AT&T for as many of them as possible.

Don't blow age issue out of proportion

'Fast track' is a monthly column dedicated to answering questions on career directions.

BY NORM SANDERS
SPECIAL TO CW

Q: I am a computer professional with 23 years of experience, 10 in management. I am female, 52 years old, hold a Ph.D. and am currently unemployed (although I do consulting on a casual basis).

Because I cannot relocate, I apply only for local jobs. I choose only management positions that match my qualifications fairly well. There are at best three such openings per year. Generally, I don't get any response to my letters of inquiry.

It has been suggested that my age is the problem. Employers assume that they will have to pay a higher salary for a more experienced person. Further, the older employee wreaks havoc with the group health insurance policy. Finally, no one wants a subordinate who is older than they are.

Is any of this true?

A: Assuming that you have a fine management record, I don't think the problem is your age. By setting the parameters of location and job level as tightly as you have, it appears to me that you're not giving yourself much opportunity for success.

Simply, you're just going to have to market yourself better and let more opportunities come to you. Have you thought about speaking at local events, writing or getting involved in local community activities in which other business leaders are involved? What do you have to lose by applying for jobs advertised even if you view yourself as overqualified? People might adjust their thinking in organizational structures to suit you if they know a person of your qualifications is available.

My opinion is that the age issue is overblown. If you are looking for it to be a problem and believe it is a problem, it probably will be.

Q: I am looking forward to an early retirement within the next two or three years. I am wondering if there are any opportunities for part-time consulting. I like information systems work, but I'm getting tired of big-company politics and am ready for a rest.

I have more than 25 years of IS experience, including mainframes and personal computers. I am currently an internal consultant for office systems and office systems hardware. I make evaluations and recommendations at the corporate level.

How do I go about finding part-time consulting work? I hesitate going out on my own because I'm concerned it will develop into a full-time job, and that is not what I want. I would rather contract for a specific job, set a price and some dates, then approach it in a leisurely manner.

FAST TRACK

CAREER ADVICE FOR THE '90s

A: Many people think that consulting is relaxing and easy work that can be accommodated in one's relaxing schedule.

Nothing is further from the truth. In today's world, there is not much consulting money around for people who want to dabble or do things leisurely. Companies have stringent requirements for energetic consultants who can solve problems rapidly and who can get a specific set of tasks done more efficiently than they could be done internally or by another consultant.

When you retire, do it completely for a while. Get your energy and drive back, and then aggressively pursue part-time employment as a consultant if you choose.

The chance of escaping politics as an employee or a consultant is not very likely. That's why some people think about a fishing career on a secluded island.

Q: I have a master's degree in economics and more than 15 years of IS experience in positions from entry-level programmer to manager of systems and programming. My career has taken me to Europe, Mexico and Saudi Arabia. For the last six years, I have been working for contracting firms in a variety of technical and analytical assignments.

Should I seek out permanent employment in a more traditional environment again? If so, when? The alternative would be to remain in contracting/consulting. If I choose that option, how do I select the type of firm with which to build a career?

A: Your value to a company, particularly at a senior-management level, is a function of your background and experience. Obviously, your international background and experience might be very useful to a company whose needs and problems duplicate those areas in which you have the maximum experience. You are probably well-connected with companies operating in those arenas, and your network of contacts into those firms is possibly your strongest bet for connecting with a company.

As for the "traditional environment," I'm not sure there are many traditional opportunities any more. There are so many people vying for each senior position open today that the chance of your being given the nod over someone who has had virtually identical experience in the "traditional environment" is truly a long shot. That is not to say that it is impossible; I believe your better chance is to have your services engaged by a company in the contracting/consulting area and try to network those jobs into a more permanent relationship.

We welcome your questions. Send them to Cathy Duffy, Careers Fast Track, Computerworld, 375 Cochituate Road, Framingham, Mass. 01701, or fax them to (508) 875-8931. Your initials and town will be printed unless you request otherwise.

Sanders is president of Hazlet, N.J.-based Norm Sanders Associates, a senior-level IS executive search firm.

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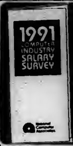

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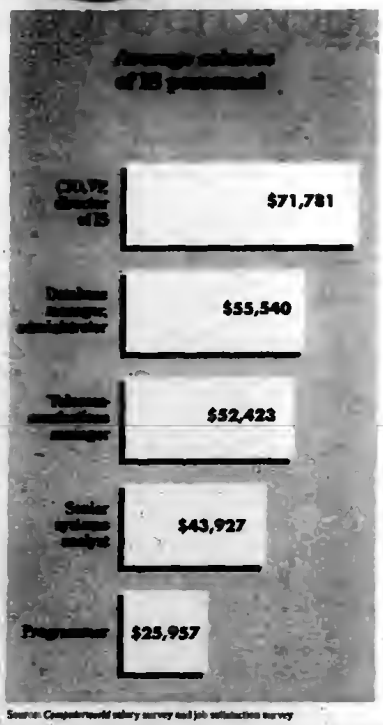

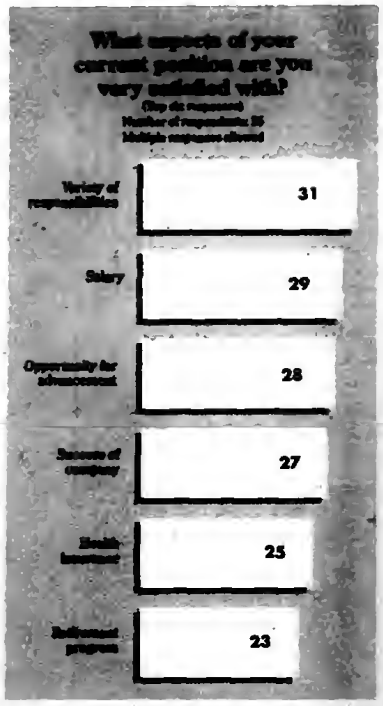

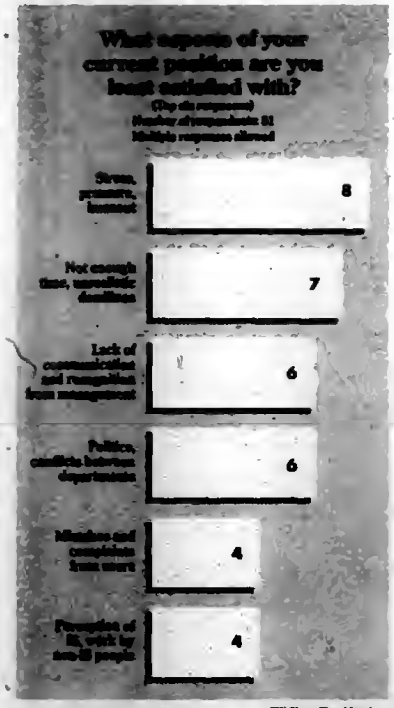

Source: Computerworld salary survey and job satisfaction survey

CW Chart: Tom Monahan

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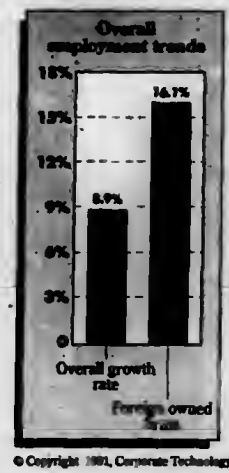

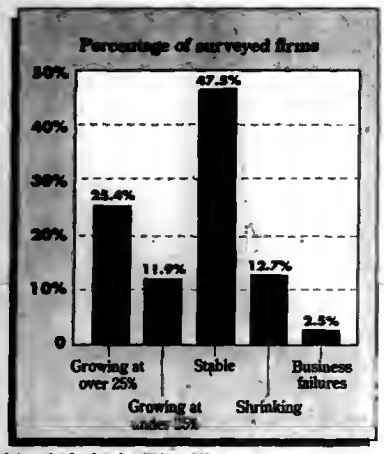

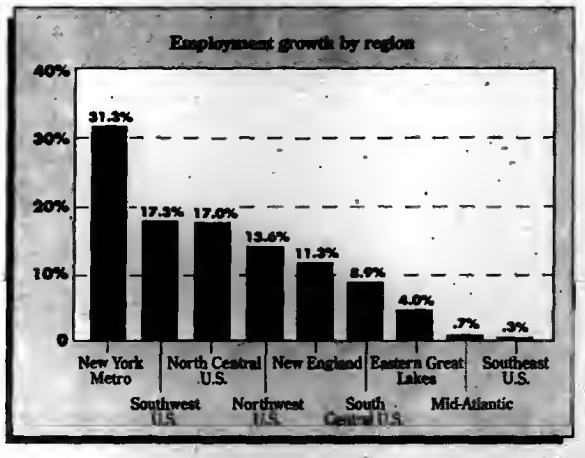

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Challenges created by Windows' popularity

BY JESSICA KEYES
SPECIAL TO CW

The growing popularity of Microsoft Corp.'s Windows 3.0 in many corporations causes unique problems for software developers creating applications in a windowing environment. These problems are gradually being addressed by new development tools being delivered by a number of vendors. However, information systems managers must take care to navigate the differences among these new solutions.

First, IS managers asking their staffs to develop Windows applications should be aware that graphics programming is fundamentally different from text-based programming. For example, just creating a window that displays the word "hello" can take hundreds of lines of code. All of the default characteristics that define how the window behaves on the screen have to be programmed from scratch. Thus, hundreds of lines of code are required to select the standard fonts, handle scrolling and control the use of the mouse.

In addition, applications must be structured quite differently from traditional applications to accommodate a more flexible user interface. Instead of the application program controlling the user interaction, the windowing environment is now in control.

For instance, when the user selects a menu item or clicks the mouse, the windowing system sends a message informing the window of the event that must take place. Windows systems are often called "event-driven" or "message-driven" because of this interaction.

Developing in such a foreign and difficult environment — Windows 3.0 contains more than 450 callable functions that a programmer must learn — coupled with an often unyielding development schedule makes it necessary for IS managers to find a package that gets programmers up to speed as quickly as possible.

Fortunately, there are a number of tools on the market that can turn a Windows novice into a Windows maven in practically no time.

With the wide price range of $395 to $3,500 (with the higher price providing more memory and capabilities), these products unlock the potential of graphical user interface development. However, before buyers jump into making a purchase, they should be aware of some of the windowing tool sets' strengths and weaknesses:

- **Keyboards vs. mice.** There's really no secret to using a mouse rather than a keyboard — it's just another peripheral to the computer. What's different is the context in which the mouse is used for developing applications.

The keyboard is generally used to type character strings or to access any one of a number of function keys. Programming with a mouse necessitates understanding how to program things through Cobol routines such as list boxes, buttons, resizing of windows, highlighting variable character strings and even using the mouse to drag objects from one area of the display to another.

- **Object orientation.** All development tools for windowing environments are object oriented. Object-oriented programming is now widely accepted by many as the best way to manage software complexity — especially the complexity of programming in a windowing environment.

One trait of an object-oriented system is an object's ability to inherit attributes from a parent. In a windowing environment, this enables an easier development of sophisticated windows. A complex window that contains list boxes, scroll bars, menus, dialog boxes and buttons can be mocked up easily because each of them automatically inherits all of the standard windowing behaviors.

- **Multiplatform considerations.** Companies with multiple platforms should choose their tools wisely. Not all tools will work on all platforms. For example, the windowing standard for non-IBM Personal Computer platforms is not Microsoft's Windows. Workstations, minicomputers and even IBM reduced-instruction set computing systems use the X Window System standard.

From the application programmer's perspective, the best tool would be the one that works the same regardless of platform. In other words, let the software take care of the differences between X Window and Microsoft's Windows.

- **Disk and memory requirements.** Most development tools for Windows have high memory requirements. Some of the higher end products require a minimum of 10M bytes of free disk space plus at least 4M bytes of memory. If all you need to do is develop windowing applications and you don't need a robust, full-blown application development environment, stick to the lower end, lower requirement and lower price offerings.
- **Software support.** Because there is such a learning curve in understanding how to use windowing tool sets, the most valuable asset for developers will be their ability to call for assistance.

Windows development software:

- Toolbook by Asymetrix Corp. ($395)
- Knowledgepro/Windows by Knowledge Garden, Inc. ($695)
- Actor by The Whitewater Group, Inc. ($895)
- Smalltalk by Parcplace Systems ($3,500)
- C++/Views by CNS, Inc. ($495)

Keyes is president of New Art, Inc., a management and computer consulting firm in New York.

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AT Model 339	$925	$1,100	$900
PS/2 Model 30-286	$1,000	$1,300	$1,000
PS/2 Model 60	$1,500	$1,800	$1,400
PS/2 Model 70P	$3,000	$3,500	$2,500
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Apple Macintosh Plus	$800	$975	$700
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The Payroll, Personnel and Position Management System bid packages will be available for release on February 4, 1991. A bidders conference will be held on February 22, 1991 regarding this bid. The Relational Data Base Management System and Fourth Generation Language Package bid packages will be available for release on February 11, 1991. A bidders conference will be held on March 4, 1991 regarding these two bid packages. The bidders conference will be the ONLY opportunity to clarify the requirements presented in the bid packages.

Bid request documents may be obtained from all documents from the County of Summit Office of Budget and Management, Room 410, 175 S. Main Street, Akron, Ohio 44308, Monday through Friday (except legal holidays), by calling (216) 375-2376, or by fax (216) 375-2207 and requesting a bid request be mailed.

All bids are to be submitted uniformly in accordance with the specifications identified in the bid request without exception.

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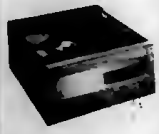

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Business as usual for disabled

BY LISA GUISBOND
SPECIAL TO CW

At first blush, training disabled people to become productive information systems professionals may seem to pose unique challenges. However, IS trainers say that once the system is made accessible to the student, training disabled people is essentially the same as training anyone else.

In fact, they say, the greatest obstacle to disabled IS professionals isn't the training environment but the attitudes of potential employers who aren't convinced of the disabled person's capabilities.

Attitudes like this prevent employers from tapping a vast pool of potential IS employees, given the fact that IS positions are often well-suited to a disabled person's capabilities and limitations.

"All across the board, for many disabled people, computers are a fantastic opportunity. It doesn't generally require a tremendous amount of mobility, and it does allow a user to rely on one sense or another," says Gil Mann, chairman of Minneapolis-based Learn-PC, a producer of videotape-based personal computer software training systems.

Jim Vagnoni, executive director of the University of Pennsylvania's Center for Information Resources (CIR), has 15 years of experience with IS training for the disabled. CIR offers a variety of IS training programs for disabled people and provides three-month internships in IS work environments.

According to Vagnoni, CIR's philosophy is to adapt to the person, not the disability. Before the student begins training, CIR staffers work with the individual to make whatever accommodations are necessary. In many cases, these accommodations are extremely low-tech and low-cost: For example, a cigar box with a felt pad used by a student with muscular dystrophy to rest his wrists on, accommodates the fact that he has movement only in his hands and fingers.

Once the student and staff settle on an assistive device, it belongs to that student and can be taken with him to his job when he is placed. Obviously, Vagnoni says, students with vision impairment require more sophisticated accommodations, such as speech-output software.

While recognizing the tremendous advances that have been made in assistive technology in recent years, Vagnoni says he sees a great opportunity for further research and development. Despite the profusion of devices that have appeared during the past year, many are still in a crude state of development, he says. "I'm a real skeptic about some of the products that are out there. They're just overpriced and unnecessary."

Whatever the assistive device, CIR maintains the philosophy of adapting to the individual. That approach has apparently worked well for the program, which has placed more than 90% of its graduates in full-time IS jobs since the program started in 1976.

One resource developed for training hearing-impaired IS workers has been used successfully by the federal government and Gallaudet University, among others. Learn-PC's video-based software training products come with closed-captioning so that both hearing and hearing-impaired workers have access to the same training.

"Our videos were already done and were proven effective with hearing employees, so all we did was take the same training curriculum and encode closed-captioning within the video," Mann says.

The interest generated by this product has prompted Mann to begin compiling a resource guidebook of assistive technologies and resources that are available free to the public. He says he expects it to be completed soon.

Hot line available

There are several other services that aid in finding assistive technologies. The Job Accommodation Network, a publicly and privately funded resource hot line in Morgantown, W. Va., can help employers find assistive technologies or address compatibility issues free of charge.

IBM offers a service called the National Support Center for Persons with Disabilities, based in Atlanta. While the IBM service cannot prescribe a specific piece of technology, it does provide information on available technology for mobility, hearing, speech, learning and vision impairments.

Another IBM program that focuses on IS training for the disabled looks beyond the use of assistive devices and brings together state vocational rehabilitation agencies, business representatives and training agencies to establish self-sustaining computer training programs for the disabled. Irv Kaplan, manager of IBM's Rehabilitation Training Programs, explains that the goal of the programs is to overcome the barriers for the disabled.

"We're doing networking. We're getting people who are the movers and shakers in the programming business — or whatever business you happen to be training people for — directly involved with the students and the program. We're giving them technical control of the contents of the training," Kaplan says.

Kaplan adds that he doesn't emphasize technical accommodation because it hasn't been a major issue in most cases. "That doesn't mean there isn't somebody here and there (who needs technical accommodation)."

Kaplan and others in IS training for the disabled stress that opportunity and access — not special training techniques per se and certainly not special treatment — are really the issues.

David Castel, vice president of human resources and enterprise at Abilities, Inc. of Florida in Clearwater, is adamant on this point. His company comprises a rehabilitation training group for people with physical disabilities and a group of profit-making businesses that hire some graduates of the training program. "All any person with a disability is asking is: First, make the work location accessible, and second, keep the scorecard the way you would for any employee who's not in a wheelchair or doesn't have a disability. Period."

Guisbond is a free-lance writer based in Cambridge, Mass.

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RECOMMENDATION CHANGES

UPGRADED FROM HOLD TO BUY: **Silicon Graphics, Inc.** (Bear Stearns & Co.). Reason: Expanded markets, excellent management, strong balance sheet; demand for workstations greater than expected.

UPGRADED FROM HOLD TO BUY: **Intel Corp.** (Bear Stearns). Reason: Earnings growth to jump because of big demand for 80386SX-based notebook computers; I486 chip business to pick up as prices on those machines drop.

UPGRADED FROM AVOID TO HOLD: **Seagate Technology, Inc.** (Bear Stearns). Reason: Gained share in 3½-in. disk-drive arena; second-quarter earnings higher than anticipated.

UPGRADED FROM BUY TO STRONG BUY: **Microsoft Corp.** (Alex. Brown & Sons, Inc.). Reason: Windows 3.0 is most powerful product-cycle story in desktop industry; strong international sales expected.

DOWNGRADED FROM BUY TO MODERATELY ATTRACTIVE: **Microsoft** (Donaldson, Lufkin & Jenrette, Inc.). Reason: Stock price has appreciated too much recently; competitive climate in Windows applications world to thicken in near term.

DOWNGRADED FROM BUY TO HOLD: **Autodesk, Inc.** (Prudential-Bache Securities, Inc.). Reason: Last quarter's profits fell short of estimates; delays in key products such as foreign language and Intel 80286-based versions of Autocad Release 11.

DOWNGRADED FROM HOLD TO AVOID: **Tandem Computers, Inc.** (Bear Stearns). Reason: Current cost-cutting measures not enough; new products slated for 1991's second half raise tough product transition and management questions.

DOWNGRADED FROM HOLD TO SELL: **Amdahl Corp.** (Prudential-Bache). Reason: Quarter just ended may be last good quarter until late this year or early 1992; new M-series machines unlikely to be available in enough volume to boost revenue this year.

ANALYSIS IN BRIEF

Planned technology spending in industries such as manufacturing, government and finance dropped this fiscal year to the lowest level in four years. Most of the 465 information systems executives surveyed said they will defer buying big-ticket items, in part because of the Persian Gulf war.

Projected minicomputer spending declined compared with last year, while mainframe budgets remained flat. The survey unearthed encouraging signs for **IBM, Sun Microsystems, Inc.** and Tandem Computers, as respondents indicated overall favorable attitudes toward these suppliers. Prospects for **Hewlett-Packard Co.** look grim, however, as 30% of current HP sites surveyed said they will cut spending with the firm.

Microcomputer spending will grow, but major personal computer vendors may not necessarily benefit. More respondents said they will install new mission-critical software on IBM Personal Computer-compatible clones rather than on machines from either **Compaq Computer Corp.** or **Apple Computer, Inc.** — *Paine Webber, Inc., U.S. Computer Survey, Jan. 22, 1991.*

KIM S. NASH

STOCK TRADING INDEX

THIS WEEK'S HIGHLIGHTS

- *Quarterly sales and profits* were up at Advanced Logic Research, Inc., but its share price sunk last week. The microcomputer clone maker lost 1¼ points to close Thursday at 12¾.
- Microsoft Corp. and Novell, Inc. outdid themselves as each firm twice topped 52-week highs last week. By Thursday, Microsoft was up 4⅞ points to 103, while Novell climbed 3 points to 46.
- Despite IBM's suit against it, Comdisco, Inc. jumped 1⅛ points, closing at 25⅛. IBM also gained last week, up 1¾ points to 128½.
- Semiconductor stocks fared well during last week's market rally. Texas Instruments, Inc., which had been losing ground of late, rebounded 2⅞ points to 40¼. Meanwhile, Intel Corp. shot up 3½ points to 49¼, and Motorola, Inc. picked up 1⅜ points, closing at 56⅛.
- Network Systems Corp. tumbled 2⅝ points to 12¼, despite posting favorable financials Thursday.

Computerworld Stock Trading Summary

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TOP PERCENT GAINERS	
Businessland Inc.	121.24
Ultimate Corp.	75.57
Informa Corp	44.23
Masstor Systems	37.60
Phoenix Technologies	31.38

TOP PERCENT LOSERS	
Televideo Systems	-24.80
Interleaf Inc.	-20.83
Network Systems Corp	-17.67
Data Switch Corp.	-17.24
System Software Assoc	-8.64

TOP DOLLAR GAINERS	
Microsoft Corp.	4.87
Computer Sciences	4.00
Intel Corp.	3.50
Matsushita Electronics	3.50
Southwestern Bell	3.24

TOP DOLLAR LOSERS	
System Software Assoc	-3.25
Network Systems Corp.	-2.63
AST Research Inc.	-2.00
Digital Equipment Corp	-1.63
Borland Int'l	-1.63

Communications and Network Services — Up 4.13%

Exch	52-Week	Range		Feb. 7 Close	Wk Net Change	Wk Pct Change
OTC	16.00	5.88	3COM Corp.	9.50	2.12	38.73
NYS	80.75	63.50	American Info Techs Corp.	67.50	2.37	3.64
NYS	44.13	29.00	AT&T	34.13	1.38	4.20
OTC	8.63	0.88	Artel Communication Corp.	3.13	0.50	18.82
NYS	88.25	85.50	Bell Atlantic Corp.	49.38	1.88	2.84
NYS	57.63	49.00	Bellsouth Corp	52.13	-0.38	-0.71
OTC	18.38	8.25	Compression Labs Inc.	14.38	0.74	5.47
NYS	87.80	23.38	Contel Corp	87.50	1.80	4.17
OTC	4.88	1.75	Data Switch Corp.	3.63	-0.76	-17.24
NYS	26.75	8.88	Digital Comm. Assoc.	16.00	2.63	18.56
OTC	21.00	12.25	Dynatech Corp.	21.00	0.29	1.20
OTC	12.88	5.80	Fibronics Int'l Inc.	8.75	0.87	11.04
OTC	4.00	1.75	Gandalf Technologies Inc.	3.63	-0.09	-2.42
NYS	4.75	1.63	General Datacomm Inds.	2.75	-0.13	-4.51
NYS	34.13	63.80	GTE Corp.	30.38	1.25	4.27
OTC	7.00	0.81	Infotron Systems Corp.	1.00	-0.08	-5.88
NYS	60.88	40.25	ITT Corp.	55.00	3.12	6.01
OTC	44.13	17.88	MCI Communications Corp	24.00	-0.38	-1.56
OTC	31.00	2.75	Microcom Inc.	4.38	0.63	14.71
NYS	34.38	4.63	Network Equipment Tech.	3.25	0.87	19.38
OTC	14.63	4.00	Network General	10.50	-0.75	-6.67
OTC	15.25	8.00	Network Systems Corp.	12.25	-2.63	-17.67
NYS	29.63	22.13	Northern Telecom Ltd	28.75	1.00	3.30
OTC	48.00	14.25	Novell Inc.	46.00	3.00	6.38
NYS	38.50	67.13	Nynex Corp	73.38	2.88	4.35
NYS	47.88	88.25	Pacific Telesis Group	42.38	1.63	3.94
ASE	10.90	4.75	Penril Corp.	10.50	-0.80	-4.55
NYS	29.13	8.38	Scientific Atlanta Inc.	13.38	2.24	16.47
NYS	38.50	47.25	Southwestern Bell Corp	55.38	3.24	6.22
NYS	46.88	20.63	United Telecom	24.50	-0.13	-0.53
NYS	40.50	32.88	US West Inc.	38.38	0.13	0.33

Computer Systems — Up 5.91%

Exch	52-Week	Range		Feb. 7 Close	Wk Net Change	Wk Pct Change
OTC	8.75	0.56	Alliant Computer Sys.	1.00	0.00	0.00
ASE	18.88	10.00	Amdahl Corp.	16.00	0.12	0.75
OTC	57.75	24.25	Apple Computer Inc.	57.75	2.25	4.06
OTC	13.88	4.25	Archive Corp.	7.00	-0.13	-1.52
OTC	45.00	12.88	AST Research Inc.	45.00	-2.00	-4.26
NYS	8.63	3.38	Bolt, Beranek & Newman	6.13	-0.25	-4.00
NYS	18.25	4.50	Commodore Int'l	16.25	0.62	3.97
NYS	88.50	35.50	Compaq Computer Corp.	69.50	-0.50	-0.71
OTC	4.25	0.13	Computer Automation Inc.	1.25	0.25	25.00
NYS	21.63	6.75	Control Data Corp.	12.75	1.87	17.16
NYS	20.88	6.88	Convex Computer	15.38	0.24	1.57
NYS	31.25	20.00	Cray Research Inc.	38.63	-0.13	-0.32
NYS	13.25	3.50	Data General Corp.	8.50	-0.50	-5.88
NYS	3.38	0.75	Datapoint Corp	2.25	0.25	12.50
OTC	24.25	4.63	Dell Computer Corp.	24.25	1.62	7.16
NYS	38.13	45.50	Digital Equipment Corp.	70.00	-1.63	-2.28
NYS	30.13	13.75	Harris Corp.	25.38	3.13	13.74
NYS	50.38	24.88	Hewlett Packard Co.	38.25	-0.63	-1.82
NYS	128.50	39.80	IBM	128.50	1.62	1.28
OTC	14.00	7.75	Information Int'l	8.25	1.25	16.63
OTC	23.00	30.50	Intergraph	18.75	1.00	5.63
NYS	3.88	0.88	MAI Basic Four Inc.	1.00	0.00	0.00
NYS	180.38	114.00	Matsushita Electronics	130.50	3.50	2.75
OTC	28.00	9.00	Mentor Graphics Corp.	15.63	-0.88	-2.34
NYS	92.38	44.90	NCR Corp.	89.25	1.37	1.56
OTC	35.50	11.00	Pyramid Technology	16.50	1.25	8.35
OTC	34.00	9.75	Sequent Computer Sys	14.00	-0.50	-3.45
NYS	40.88	16.00	Silicon Graphics	26.00	2.75	8.27
NYS	29.00	14.63	Stratus Computer Inc.	27.30	0.12	0.44
OTC	37.25	16.00	Sun Microsystems Inc.	29.50	1.12	3.38
NYS	50.13	8.38	Tandem Computers Inc.	14.30	0.57	6.38
NYS	38.80	29.50	Tandy Corp.	32.25	1.50	4.38
OTC	35.50	6.75	Teradata	15.25	-0.38	-2.43
NYS	8.00	1.38	Ultimate Corp	4.25	1.87	75.57
NYS	17.13	1.75	Unisys Corp.	2.88	0.25	13.00
ASE	8.25	2.00	Wang Labs Inc. (B)	2.88	0.13	4.55

Software & DP Services — Up 8.93%

Exch	52-Week	Range		Feb. 7 Close	Wk Net Change	Wk Pct Change
OTC	60.75	17.00	Adobe Systems Inc.	88.80	1.80	3.88
OTC	40.88	16.50	Aldus Corp	40.25	2.75	7.33
OTC	22.88	10.50	American Mgmt. Systems	22.38	1.63	7.88
OTC	18.25	7.50	American Software Inc.	16.50	-0.25	-1.49
NYS	4.50	1.88	Anacomp Inc.	2.38	0.00	-0.21
OTC	23.50	10.00	Analysts Int'l	16.25	0.00	0.00
OTC	13.13	4.38	Ashton Tate	8.75	-0.13	-1.88
OTC	10.25	4.00	ASK Computer Sys.	6.88	0.88	14.58
NYS	62.63	45.25	Auto Data Processing	62.38	2.38	4.61
OTC	80.26	32.00	Autodesk Inc.	46.25	0.75	1.38
OTC	25.50	12.00	BGS Systems Inc.	25.25	0.75	3.09
OTC	88.50	17.75	BMC Software Inc.	80.50	1.82	4.28
OTC	21.80	11.00	Boole & Babbage Inc.	12.25	-0.50	-8.82
OTC	60.00	10.63	Borland Int'l	48.38	-1.63	-3.25
NYS	11.38	0.38	Businessland Inc.	3.50	1.37	121.24
OTC	12.25	4.25	Cognos Inc.	12.25	-0.38	-3.01
NYS	18.38	4.38	Computer Associates	9.50	1.13	13.37
OTC	17.25	7.75	Computer Horizons	15.00	-0.25	-1.64
NYS	38.50	38.75	Computer Sciences	56.50	4.00	7.62
NYS	12.25	8.63	Computer Task Group	8.25	-0.25	-2.83
OTC	25.26	14.00	Comshare Inc.	13.25	0.75	5.17
NYS	16.00	3.75	Corporate Software	8.00	-0.25	-2.75
NYS	45.75	24.38	General Motors (cl e)	45.75	0.75	1.67
OTC	18.25	7.25	Goal Systems Int'l	16.75	2.00	13.56
OTC	4.73	1.38	Hogan Systems Inc.	3.73	0.63	16.81
OTC	8.75	3.00	Index Technology	6.80	0.67	11.40
OTC	16.63	7.75	Information Resources	14.25	0.62	4.55
OTC	17.50	2.63	Informix Corp	4.88	1.50	44.23
OTC	7.88	1.88	Intelligcorp Inc.	3.13	0.38	21.43
OTC	8.00	2.50	Interleaf Inc.	4.75	-1.25	-20.83
OTC	31.50	10.00	Knowledgeware Inc.	31.50	3.75	6.57
OTC	35.75	16.73	Legent Corp	35.75	0.12	0.34
OTC	89.25	12.80	Lotus Development	16.90	3.75	16.42
OTC	26.26	13.63	Micrografx	26.00	2.50	10.64
OTC	103.00	40.00	Microsoft Corp.	103.00	4.87	4.38
NYS	10.13	4.00	On Line Software Int'l	7.13	-0.88	-5.00
OTC	26.88	4.38	Oracle Systems	10.13	1.13	12.50
NYS	17.88	7.00	Panasophic Systems	11.88	0.38	8.33
OTC	8.75	1.25	Phoenix Technologies	6.75	1.62	31.58
NYS	49.25	50.75	Policy Management Sys.	48.25	1.75	3.38
NYS	23.63	11.80	Reynolds & Reynolds	17.88	-0.13	-0.71
OTC	18.13	6.88	Sage Software Inc.	8.13	1.38	17.74
OTC	22.25	14.80	SEI Corp.	22.25	3.00	16.58
OTC	18.88	12.00	Shared Medical Systems	18.88	1.24	8.23
OTC	26.00	12.00	Software Publishing Corp.	24.50	2.25	10.11
NYS	11.00	5.50	Sterling Software	10.13	1.63	18.12
OTC	26.00	6.50	Sungard Data Sys.	14.75	2.37	18.14
OTC	37.50	16.25	Symantec Corp	37.50	0.75	2.04
NYS	24.88	4.80	System Center Inc.	8.25	0.25	3.00
OTC	38.86	12.75	System Software Assoc.	33.30	-3.25	-8.64
OTC	27.38	4.75	Wallek	13.00	0.88	6.01

Semiconductors — Up 6.38%

Exch	52-Week	Range		Feb. 7 Close	Wk Net Change	Wk Pct Change
NYS	29.88	17.63	Advanced Micro Devices	22.63	3.25	11.88
NYS	8.75	5.80	Analog Devices Inc.	8.75	0.87	11.04
OTC	23.50	3.29	Chips & Technologies	11.38	0.87	8.38
OTC	60.00	28.00	Intel Corp.	49.25	3.50	7.88
NYS	13.00	3.13	LSI Logic Corp.	8.00	0.80	8.67
NYS	18.38	8.75	Micron Technology	11.50	-0.88	-7.11
NYS	88.38	45.75	Motorola Inc.	56.13	1.38	2.81
NYS	8.88	3.00	National Semiconductor	6.25	0.37	6.25
NYS	44.00	22.50	Texas Instruments	40.25	2.87	7.88
OTC	12.25	3.00	VLSI Technology	6.81	-0.19	-2.87
ASE	14.88	4.00	Western Digital Corp.	6.88	1.00	16.48

Peripherals & Subsystems — Up 5.40%

Exch	52-Week	Range		Feb. 7 Close	Wk Net Change	Wk Pct Change
OTC	2.38	0.09	Alloy Computer Prod	0.13	-0.01	-3.85
OTC	3.50	0.88	Apertus Technologies	3.30	0.38	14.29
OTC	24.00	7.50	Banctec Inc.	10.13	1.63	18.12
ASE	6.13	3.13	Cognitronics Corp.	6.13	0.25	3.11
NYS	31.25	12.38	Conner Peripherals	27.75	1.00	3.74
ASE	22.00	7.00	Dataram Corp	10.25	-0.25	-2.38
NYS	10.90	4.13	EMC Corp.	8.25	-0.63	-6.38
NYS	63.88	33.75	Eastman Kodak Co.	43.88	1.24	2.92
OTC	8.90	4.88	Emulex Corp.	8.00	0.75	10.34
OTC	64.50	14.00	Evans & Sutherland	23.30	2.75	13.25
OTC	8.25	3.13	Iomega Corp.	4.94	-0.06	-1.24
OTC	22.50	6.00	IPL Systems Inc.	22.50	1.25	5.38
OTC	2.00	0.13	Masstor Systems	0.88	0.19	37.30
OTC	17.00	2.63	Maxtor Corp.	4.63	0.38	23.33
OTC	11.75	3.88	Micropolis Corp	11.75	0.75	6.38
NYS	91.88	73.63	3M Corp	87.25	2.37	2.76
OTC	14.50	6.00	Printronix Inc.	8.00	0.25	3.23
NYS	21.25	8.50	QMS Inc.	18.50	0.37	2.04
OTC	25.75	8.88	Quantum Corp.	22.50	1.75	8.63
NYS	6.88	4.88	Recognition Equipment	5.75	0.50	9.52
OTC	8.38	4.00	Rexon Inc.	7.00	-0.25	3.70
OTC	18.75	3.63	Seagate Technology	14.25	0.75	5.38
NYS	35.25	11.00	Storage Technology	25.13	-0.63	-2.17
OTC	4.00	0.88	Tandon Corp.	3.08	0.25	8.00
NYS	30.75	11.63	Tektronix Inc.	20.75	1.00	5.08
OTC	0.63	0.16	Televideo Systems	0.19	-0.06	-24.80
NYS	56.75	30.00	Xerox Corp.	48.88	1.13	2.32

Leasing Companies — Up 9.73%

Exch	52-Week	Range		Feb. 7 Close	Wk Net Change	Wk Pct Change
OTC	10.75	6.88	Amplicon Inc.	10.75	1.50	16.22
OTC	4.25	0.31	Capital Associates	0.50	0.06	13.64
NYS	28.50	14.63	Comdisco Inc.	25.13	1.13	4.88
OTC	16.25	8.25	LDI Corporation	12.00	1.25	11.63
OTC	5.88	2.25	Selectaterm Inc.	2.50	0.00	0.00

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U.S. budget shines on high-tech

BY GARY H. ANTHES
CW STAFF

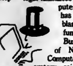
WASHINGTON, D.C. — Despite the financial pressures brought on by war, deficits and troubles in the banking industry, the Bush budget for fiscal 1992 earmarks generous increases for some high-technology programs, including computing and communications.

President Bush asked for $76 billion for research and development, up $8.4 billion or 13% from last year. He also asked for $149 million in new funding — a total of $638 million, up 30% — for a program to develop high-performance computer hardware and software and a gigabits-per-second National Research and Education Network (NREN). It is the first time Bush has sought increased spending for the program, originally proposed by Sen. Albert Gore (D-Tenn.) several years ago.

However, would-be recipients of the largess are not counting their funds until they are hatched. The budget contains spending proposals. Real funds must be appropriated by Congress later this year.

The budget seeks a 19.5% increase for the National Institute of Standards and Technology (NIST), whose computer activities are to get a 26% boost to $15 million. The increase will fund stepped-up work in computer security and a centralized clearinghouse for tracking and responding to computer viruses.

NIST has come under fire for its alleged failure to carry out its legal mandates for civilian computer security and has responded by blaming a lack of funds. James H. Burrows, director of NIST's National Computer Systems Laboratory, said the increased budget will allow the agency to do much more but that an earlier look at its needs suggested it may still be $1 million short.



Part of the extra funds will go to helping NIST coordinate vendors and agencies in the adoption of Integrated Services Digital Network (ISDN) standards, an area Burrows said had been "run on a shoestring." NIST will also work with other agencies in applying ISDN standards to the planned transition of the NREN to commercial operation [CW, Nov. 26]. "We'll look at whether the standards can be used for new things. If not, how do they need to be changed?" he asked.

The White House has requested $2.7 billion — a boost of 17.5% — for the National Science Foundation. The largest increase — 23% to $229 million — is to go to the foundation's programs in computer science and engineering, and an additional $42 million is earmarked for work on the high-performance computing and communications initiative.

Several agencies with big data processing challenges got funds earmarked for systems modernization. For example, the Internal Revenue Service is expected to get $451 million — an increase of $173 million or 62% — for overhauling its aging tax-processing software and for new hardware at regional centers. The IRS is also expected to see its funds for ongoing processing of tax forms and returns rise from $513 million to $606 million, up 18%.

The president repeated a call he made last year for a permanent extension of the R&D tax credit, to which Congress has typically given one-year extensions. The proposed credit has the effect of trimming incremental costs of R&D by 20%, but its perennially uncertain status may inhibit multiyear projects.

Congress has been lukewarm about the tax credit because it reduces federal revenue in the short term. But economists argue that it will ultimately boost tax revenue by allowing companies to expand and become more prosperous.

"[Congress] needs to get it through their heads that the tax credit is a revenue enhancer," a spokeswoman for the Computer and Business Equipment Manufacturers Association said.

In the spotlight

The White House used its budget proposals to spotlight [illegible] large or [illegible] computer projects. To its list of high-priority programs — those 14 or so deemed to be especially worthy of top management's attention — it added the Corporate Information Management program of the U.S. Department of Defense and the Federal Bureau of Investigation's Integrated Automated Fingerprint Identification System (IAFIS).

The Corporate Information Management program is intended to eliminate the redundancy in multiple systems for common administrative functions such as payroll. It will identify uniform information requirements and data formats for use by all the military services and defense agencies.

IAFIS will give 65,000 federal, state and local law-enforcement users access to a network that can transmit fingerprint images and criminal histories.

The Bush administration also added five programs to its list of "high-risk" areas. For example, it said the U.S. Army's property and financial systems are not integrated to give financial control over some $200 billion in property.

It also spotlighted the U.S. Department of Agriculture's (USDA) food stamp program because it said $100 million in stamps are illegally exchanged for cash, drugs and weapons annually. The White House hinted that electronic benefits transfer systems being pilot tested by the USDA may be the answer.

Alliances to be announced at Networld

BY JOANIE M. WEXLER
CW STAFF

BOSTON — Vendors will crowd around the Networld '91 Boston dais this week to announce alliances aimed at filling frustrating local-area network interoperability and network management gaps. However, analysts and users do not expect to see many shrink-wrapped breakthroughs.

What LAN managers will glean from the show, they said, is hope for tangible fruits of some vendor unions by the end of the year, along with the cozy feeling that the right vendors are joining forces.

"Even IBM will be demonstrating [Novell, Inc.] Netware and LAN Server coexistence," said Janet L. Hyland, director of network strategy service at Cambridge, Mass.-based Forrester Research, Inc. "This is not a big deal capabilitywise, but it says a lot about IBM's understanding of the importance of LAN interoperability."

Indeed, IBM is expected to announce that ports of Novell's Netware LAN operating system should be available on IBM's OS/2, RISC System/6000 and Application System/400 platforms by the end of 1991, according to Frank Dzubeck, president of Communications Network Architects, Inc., a consultancy in Washington, D.C. When it becomes a reality, the move will be a major step in uniting networks made by 57% market-share LAN leader Novell with IBM equipment users.

"IBM has decided that there are certain things you can interoperate with, some you can build bridges to and some that require you to get closer to your enemy," Dzubeck said.

The "strange bedfellows" theme could carry over to the Digital Equipment Corp. environment at Networld, according to Hyland. She said she expects a DEC/Novell announcement that addresses the integration of DEC's Pathworks software with Netware. Pathworks unifies MS-DOS, Apple Computer, Inc.'s Macintosh and OS/2 clients with a DEC VMS or Ultrix server on one network.

"I'm afraid customers will find themselves sorely disappointed with today's level of interoperability," Hyland said. "These moves are big but are still only happening at a fairly simple level."

Marc Dodge, manager of United Parcel Services, Inc.'s LAN support group, who will be attending the show, agreed. "All the LAN interoperability stuff so far is at the first two levels of the [Open Systems Interconnect] model. For example, if you have both Netware and Microsoft Corp. LAN Manager networks, you can grab data off one from the other," he said, "but then you have to write some code of your own to do something useful with it."

State of the LAN

Hyland cited "the awful state of LAN management" as another major area to be addressed at the show. This could be good news for Bill Sheehan, director of MIS at the Commonwealth of Massachusetts' Metropolitan District Commission.

Sheehan runs a Banyan Systems, Inc. Virtual Networking Software (Vines) shop and said that he would like to find an inexpensive network analyzer on the show floor. While he acknowledged that Network General, Inc.'s Sniffer protocol analyzer works under the Vines network operating system, "the last time I looked, it was $2,000 to $3,000, which is too expensive," he said.

The ability of personal computer-based LANs to interact with other corporate resources via Transmission Control Protocol/Internet Protocol (TCP/IP) is apt to be addressed at the show, as well. One analyst predicted that Novell will announce support of TCP/IP on its server, which to date has only supported Novell's proprietary IPX/SPX communications protocols.

Network update to ship in March

Novell confirmed reports last week that a maintenance update for Netware 386 will ship in March, along with several connectivity Netware Loadable Modules (NLM) for the new Version 3.11.

In a preview of its announcement at this week's Networld conference, the company also detailed its anticipated price and package restructuring for the newcomer [CW Jan. 21].

Mark Calkins, Novell's vice president of product marketing, said Version 3.11 will begin shipping next month in 20-, 100- and 250-user versions. Prices will be $3,495, $6,995 and $12,495, respectively. Previously, features were grouped in products according to the likelihood that they would be needed by small, medium or large office needs.

"If it has all the features it's supposed to have, it would address my concerns [with Version 3.1]," said Glenn Fund, principal research specialist at Lockheed Sanders, Inc.

Novell described three new sets of NLMs last week, enabling greater interoperability with Apple Computer, Inc.'s Macintosh, Open Systems Interconnect's file transfer access and management and Sun Microsystems, Inc.'s Network File Systems protocols.

Netware Version 3.11 will also include connectivity NLMs for Transmission Control Protocol/Internet Protocol and IBM's Systems Application Architecture (SAA).

Calkins said he could not comment on the technological aspects of Netware for SAA Version 1.0. Reportedly, it would increase performance over a Systems Network Architecture backbone.

Netware Message Handling System Version 1.5 was introduced last week as part of Netware 3.11. The update includes a fan-out feature that will save dial-up communications costs by sending one message over dial-up lines and distributing it to recipients at the other end.

JIM NASH

digital *In Transition*

Continued from page 1

Braucksieker said.

DEC's acceleration toward open systems also holds a distinct appeal because Ralston Purina operates internationally with other vendors such as Hewlett-Packard Co., he said. "I'd love to be able to transport applications transparently between domestic and international," Braucksieker added.

In New York, the Maynard, Mass.-based DEC has forged another sort of customer relationship with Quotron Systems, Inc. to jointly produce an interbank foreign exchange trading system that is called FX/Trader.

Braucksieker *had nothing to lose*

"What we are doing with FX/Trader is a grand experiment, and there is a lot at stake. I believe it may help shape the future of what DEC will one day become," said Ken Hines, vice president of Quotron, a wholly owned subsidiary of Citicorp. "DEC has the opportunity here to prove to the world that its reputation is well-founded, that it can do things right."

FX/Trader, which guarantees interbank traders a two-second response time from workstations anywhere in the world, has only been on the market since September. Quotron currently offers it at no charge to financial institutions willing to try it out, Hines said.

The trading product is entering a competitive arena dominated by Reuters' Monitored Dealing System, which essentially speeds up "the electronic handshake" between traders, Hines explained. "Having a vendor like DEC involved in developing this new business helps us spread the financial risk," he said.

What the traders actually see when they use FX/Trader is IBM's Personal System/2 workstation running OS/2. DEC's contribution is all behind-the-scenes, where Microvax 3100s, DEC communications processors and Decnet handle the telecommunications infrastructure that routes trader messages on high-speed international networks.

Networking is widely considered one of DEC's strongest suits as it adjusts to a future dominated by desktop computing, multivendor networks and open architectures.

"Integration technologies is the direction of the '90s to glue all the parts together," and DEC has done a remarkable job over the years in terms of networking software quality, said George Reid, MIS director at Sanford C. Bernstein & Co. in New York.

Kenneth H. Olsen, DEC's president and founder, said he has "no good label" for the company DEC will become. However, in a recent interview, he asserted that DEC is leveraging its networking expertise to achieve the transportable software everyone wanted 10 years ago.

What DEC still must learn, several industry analysts said, is how to pitch its variety of skills to customers more convincingly.

"DEC has a lot of wonderful technology, but I don't know when they're going to get paid for it," said David Wu, a financial analyst at S.G. Warburg & Co. in New York.

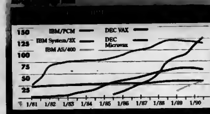
However, Olsen said that in his view, no other firm is better equipped to take the leadership position as a network and systems integrator. "No one else has the money and resources and people to do it," he said.

Fiondella likens the changes under way both at DEC and in the computer industry to a kind of urban renewal.

"You look at the city of the future and determine what you need to get there and then do it in an evolutionary way," Fiondella said. "At the outset, it looks more like the old city. Gradually, the new takes over. Then, in a sudden burst, you get it done."

Mid race

DEC, with its VAX and Microvax, has carved out a lead over IBM's [illegible]



Source: Computer Intelligence

A long way to go

DEC's multiple Unix platforms lag behind the market leaders

Top worldwide Unix market leaders

1990 Vendor	Factory Revenue	Percent of market share
HP	$2,171	12.2%
Sun	$2,142	12.0%
DEC	$1,036	5.8%
AT&T	$971	5.4%
IBM	$888	5.0%
Others	$10,652	59.6%
Total	$17,860	

1989 Vendor	Factory Revenue	Percent of market share
HP	$1,965	14.1%
Sun	$1,700	12.2%
DEC	$934	6.7%
Unisys	$906	6.5%
IBM	$892	6.4%
AT&T	$7,539	54.1%
Total	$13,936	

Source: Dataquest, Inc.

CW Charts: Paul Mock

Software intentions

Keeping a better handle on the network is foremost on users' minds at DEC sites

Planned software purchases

Percent of U.S. sites Base: 712	
19%	Network control
16%	DBMS
12%	LAN operating system
11%	Office automation
9%	Resource management
6%	Application development
5%	Design tool
5%	Programming support
5%	Performance measurement
4%	Spreadsheet
8%	Other

Source: Computer Intelligence

Unix: DEC's flavor of the year

Think "Unix," and the name Digital Equipment Corp. hardly leaps to mind, even though the firm sold $1.3 billion worth of Unix-based hardware and software last year.

DEC now hawks several flavors of Unix: its own Ultrix, AT&T's Unix System V for telecommunications customers and The Santa Cruz Operation's SCO Unix to small business users. Two months ago, DEC announced its largest external investment with the acquisition of Digital-Kienzle, a German-based company that sells Unix-based software applications throughout Europe.

"Open systems is DEC's future. Their proprietary sales are faltering," said Rikki Kirzner, a Unix systems analyst at Dataquest, Inc. in San Jose, Calif. "But what they're putting in place now will take several years [to develop]. They're a company in transition."

On one front, DEC is striving to protect its valuable installed base with a strategy to "open" the proprietary VMS operating system and improve VAX price/performance with the shift to a reduced instruction set computing CPU. The second front is its Unix efforts, which customers seem universally convinced are equally crucial to DEC's future.

"Anyone who wants to work with us in the long term has to operate in an open architecture," said Robert Fiondella, president and chief operating officer at Phoenix Mutual Life Insurance Co. in Hartford, Conn. "No one wants to be enslaved to their vendor."

To shore up its scattered open systems efforts inside the company, DEC recently pulled all of its Unix-based systems and software groups into one organization. The company still struggles, however, with the old image problem created by DEC President Kenneth H. Olsen's oft-misquoted crack about Unix and "snake oil."

Ironically, what Olsen said about Unix is still true: The claim that applications written under one flavor of Unix will effortlessly port to any other Unix system is indeed snake oil, several industry analysts noted.

The more serious problem DEC faces is that of a sales force trained to push VAX/VMS but one that is uncomfortable with Unix products.

The Ultrix operating system has also been the target of criticism by users, who find it overweight, buggy and inconsistent from one version to the next.

"We've had a lot of downtime with Ultrix on our network, and there's been patch after patch from DEC for it," said Gerald Siddons, director of scientific computing at the Dana Farber Cancer Institute in Boston.

Still, DEC's commitment to Unix was convincing enough to recently win a $1.4 million contract with Kaiser Engineers Hanford Co. in Richland, Wash. The company is using 60 Unix-based Decstation 3100s and Decstation 5000 workstations for computer-aided design.

Richard Johnston, manager of the information systems department at Kaiser, said DEC ousted Sun Microsystems, Inc. and IBM in the workstation bid through "superior local support" and an aggressive willingness to deal.

Play the right cards

The move into mainframes has been DEC's biggest gamble in years, and the dice are still tumbling for the VAX 9000.

Once customers got their hands on the machines — out the door anywhere from six to 18 months late, depending on who is counting — they tended to rave about both the hardware and the hand-holding from DEC support teams.

When one of the first dual-CPU, dual-vector VAX 9000 Model 400s arrived at the Defense Science and Technology Organization in Adelaide, Australia, it sailed through stringent benchmark tests and slipped into the laboratory's VAX environment with ease, *Computerworld Australia* reported last week.

What mainframe customers have noticed to be missing are the system support and performance management tools considered crucial for tuning complex systems. Many also objected to DEC's software pricing based on the size of the CPU — an issue to be addressed with a new pricing scheme in mid-March.

Robert Glorioso, the DEC vice president in charge of the VAX 9000, recently broadened his job description to focus more attention on the overall needs of this new class of mainframe customer. In what would once have been an unusual turnabout for DEC, the engineering is being deemed *less* important than the marketing.

"Our goal is to develop a group that has technical and marketing resources to address this class of customer and provide the account managers working with these customers anything they might need," Glorioso said.

Although there are 100 mainframe VAXes on the market now, [illegible] manufacturing capacities and a long selling cycle will delay real profitability until the 1992 to 1993 time frame, industry analysts said. [illegible] VAX mainframe line [illegible] with IBM in commercial sales, [illegible], an analyst at Gartner Group, Inc. in Stamford, Conn.

NEWS SHORTS

AT&T posts names for NCR board

AT&T announced its candidates to replace NCR Corp.'s board of directors last week. The slate will be offered at NCR's regular board meeting, expected to be held April 17, when AT&T could at most replace the four board members up for re-election — including NCR Chairman and Chief Executive Officer Charles E. Exley Jr. and President Gilbert Williamson. AT&T could also seek to replace them at a special meeting that has yet to be scheduled.

NBI slips into Chapter 11

One year of discussions with creditors, including bondholders and the Internal Revenue Service, ended in an impasse for software vendor NBI, Inc. last week. The Boulder, Colo.-based firm filed for reorganization under Chapter 11 of the federal bankruptcy code. However, NBI CEO Steve Jerritts remained optimistic that this will not be the last chapter in NBI history. A strong cash position and some $73 million in net operating losses that have been carried over to offset future income and avoid problems with the IRS bode well for a successful restructuring and re-emergence as a going concern, Jerritts said.

EMC settles with Cambex

EMC Corp. recently agreed to pay $7 million to rival Cambex Corp. as a settlement in a lawsuit that found EMC guilty of misappropriation of trade secrets late last year. The two companies, which sell memory products in the IBM mainframe market, hashed out settlement details that call for EMC to pay Cambex in $3.5 million installments of cash and stock. EMC had earlier said it was determined to appeal the guilty verdict. Sheldon Schenkler, Cambex's chief financial officer, said both parties decided "they didn't want it to drag on." However, he added, "I guess they realized that they weren't going to win." EMC stands by its claim that it was not involved in any illegal activity. A spokesman said it came down to a "question of how much time, energy and resources are you going to spend arguing about a product that neither one even really sells anymore." The lawsuit concerned memory products for the older 3080 line of IBM mainframes.

3+Open surfaces in Japan

3Com Corp.'s beleaguered 3+Open network operating system may yet live. 3+Open, based on Microsoft Corp.'s LAN Manager, is in the process of being phased out in the U.S. in deference to LAN Manager. However, 3Com's country manager in Japan, Robert Freeman, said last week that 3Com's former joint-venture partner, Soliton Systems KK in Tokyo, is considering a new name and added features for the product. A spokesman for Soliton said the company is discussing its options with Microsoft.

Shuttle riders can rent laptop PCs

Business travelers flying the Trump Shuttle will be able to rent laptop computers at Trump airport terminals in New York, Boston and Washington, D.C., according to Laptop Corp., a Boston-based rental firm. The company said many laptop owners do not take their laptops when they travel by air, especially now that there is increased airport security. Rentals begin at approximately $50 per day.

Phillips, ABF to use satellites

A trucking firm and a gas station company said last week they would explore data networking built with very small-aperture terminal (VSAT) satellite technology. Fort Smith, Ark.-based ABF Freight Systems, Inc. announced it would use VSATs from AT&T Tridom to communicate with its 300 remote locations in the U.S. and Canada. The VSAT network will carry electronic mail, bill-of-sale and accounting data between the remote locations and ABF's data center. Also last week, Phillips 66 Co. said it will test a VSAT network for credit-card authorization and point-of-sale applications. Phillips sells fuel through more than 7,800 gasoline and 800 aviation outlets. The trial will be conducted with Sears Payment Systems, Inc.

CA, start-up firm exchange legal fire

BY JOHANNA AMBROSIO
CW STAFF

NEW YORK — A start-up company charged last week that Computer Associates International, Inc. illegally obtained a copy of its beta-test software through a dummy corporation. The charge, which came in response to a recent CA suit, also alleges that CA violated antitrust laws regarding unfair competition.

Michael McElroy, CA's attorney, called these allegations "totally and utterly preposterous. CA has done nothing illegal."

The charges came on the heels of a lawsuit CA filed Jan. 18 in federal court in New York. In that suit, CA claimed that the start-up, Application Development Technologies, Inc. (ADT) in Dallas, and its founder, David W. Bryan, misappropriated CA's trade secrets. Bryan worked at CA from 1982 to 1989.

CA's suit claims that ADT's product, AD/TEC-SYS, a project-estimation package, uses proprietary formulas from two CA products, CA-Estimacs and CA-Planmacs. The suit seeks to prohibit ADT from selling its product and asks for damages of up to $4 million.

Bryan denied these charges and said the CA suit is "totally without cause. While at CA, I worked in marketing and sales and not in any technical capacity," he said. He developed a prototype at home of what later became ADT's package while learning a programming language, he said.

ADT's counterclaims charge that CA or an agent of CA set up a company called Vycom, Inc. in Berkeley Heights, N.J., "to fraudulently obtain" a beta-test copy of Release 2.0 of AD/TEC-SYS, which ADT said it plans to ship in March.

Bryan said he planned to appear at a hearing scheduled for last Friday to prove that CA used this knowledge to "radically modify" its Release 7.0 of CA-Estimacs, which has not yet been shipped, to mimic some of the features found in Version 2.0 of ADT's product.

McElroy called these charges "red herrings meant to confuse the real issue, which is that Bryan and ADT ripped off our trade secrets." McElroy acknowledged that CA did "see the product in object form to determine whether it violated any of our trade secrets," but he said CA did nothing illegal in obtaining the ADT product.

Turkstra takes over IS at Arthur Andersen

BY ELLIS BOOKER
CW STAFF

CHICAGO — Bruce Turkstra, formerly the No. 2 man in the information systems department at Merrill Lynch & Co., has joined Arthur Andersen & Co., Andersen confirmed last week.

Turkstra, 49, resigned soon after his boss, DuWayne Peterson, announced his intention to retire [CW, Jan. 7].

Edward Goldberg, a 30-year veteran of Merrill Lynch and currently a senior vice president and director of the Professional Securities Services Group, was named as the successor to Peterson, who will step down in June. Turkstra had been the senior vice president of global information services at Merrill Lynch since 1987.

Turkstra, who was not available for comment, became managing director of IS services at Arthur Andersen effective Feb. 1. He will be responsible for developing and operating the internal IS operations for the global organization, which has headquarters in Chicago, New York and Geneva and is the coordinating entity of the Arthur Andersen Worldwide Organization.

Prior to joining Merrill Lynch, Turkstra had served at First National Bank of Chicago.

Probe

FROM PAGE 1

Sundevil was "still in the prosecution and investigative stages."

The investigation suffered a temporary setback in early January after the Arizona attorney general laid off 13 people, including Gail Thackeray, the assistant attorney general who directed the state's participation in Operation Sundevil. Thackeray masterminded the establishment of a sting bulletin board to ensnare computer hackers suspected of dealing in stolen credit-card numbers, long-distance telephone fraud and other computer-related crimes.

Arizona's investigation continues, said Steve Tseffos, a spokesman for the Arizona attorney general's office. "Gail Thackeray has taken the case with her to the Maricopa County attorney general's office, where she now works," he said. Calls to that office were not returned.

A Freedom of Information Act request filed last year to find out more information about the Sundevil investigation proved fruitless, said Marc Rotenberg, an attorney and director at Computer Professionals for Social Responsibility's Washington office. "They have given us nothing but a couple of press releases and said the reason was that the investigation was an ongoing process," he said.

The Secret Service also sent *Computerworld* two press releases in response to a detailed Freedom of Information Act request for information about the well-publicized hacker dragnet.

Another advocacy group, the Electronic Frontier Foundation (EFF), plans to take legal action in the Sundevil cases, probably within the next two months, said Mike Godwin, in-house counsel for the foundation. He declined to specify which cases the group will pursue.

Civil libertarians have charged that government and state law enforcers have swept up innocent people in their dragnet and, at the same time, have trampled over their First and Fourth Amendment rights by illegally seizing computers used to operate bulletin boards.

Concern for the rights of computer users netted in the raids led to the start-up of the EFF by Mitch Kapor, founder of Lotus Development Corp. and On Technology, Inc., and John Barlow, an author and lyricist. Apple Computer, Inc. co-founder Steve Wozniak and an unnamed Silicon Valley executive have also contributed funds to the venture. The EFF has provided funds and other assistance in the defense of Craig Neidorf, publisher of a computer underground newsletter, and Steve Jackson, publisher of role-playing games.

In January, a Boston law firm associated with EFF filed a "friend of the court" brief in the case of Len Rose, a Unix consultant from Maryland who was accused of possessing stolen source code and trafficking in password collection programs.

CIVIL LIBERTARIANS HAVE charged that government and state law enforcers have swept up innocent people in their dragnet.

IBM insists IMS interface is alive and well

BY ROSEMARY HAMILTON
CW STAFF

IBM not only denied a report last week that it killed plans for a SQL interface to its IMS database, but it also said the project will likely be bigger than originally planned.

The SQL interface would allow users to access data within the hierarchical IMS with the same procedures they use to get data from the relational DB2. Observers said this is no easy task because of the fundamental differences in the two database environments.

A company spokesman said IBM is evaluating options that could expand the interface to other nonrelational database management systems as well as the idea of bringing in outside help, either by licensing technology or using a third-party developer.

These changes come 10 months after a senior IBM executive said the IMS interface would be announced "soon." However, IBM maintains that the current re-evaluation does not imply there were problems or a leasening in IBM's commitment to the interface.

However, some observers raised questions about the latest move. Since they claimed the SQL interface for IMS is difficult to develop, they wondered why IBM would elect to expand the project.

"If they had abandoned it, it wouldn't have surprised me," said Colin White, president of Database Associates International in Morgan Hills, Calif. "I think producing SQL front ends to nonrelational systems is difficult. It's a tough job to achieve compatibility."

Shaku Atre, a partner at Atre/Computer Assistance, which is a division of Coopers & Lybrand, said she suspects the changes reflect a business decision on IBM's part that the interface would not be a big enough money maker.

Atre claimed that only a small number of users would have use for the product because many users maintain IMS and DB2 as separate worlds.

"They may be figuring out now what to get rid of and what to concentrate on," Atre said.

White said he suspects IBM may be shifting gears from an exclusive IMS focus to a more generic SQL interface that could address other DBMSs and flat files. He suggested IBM could develop a core technology for access to nonrelational data that could then be optimized for specific database environments at a later date.

New Wave

FROM PAGE 1

Way, Wash.-based Weyerhauser Corp., initially committed to New Wave but has deferred the purchase. He said that it does not yet work with several of his applications, including Wordperfect Corp.'s Wordperfect, Lotus Development Corp.'s 1-2-3 and Ashton-Tate Corp.'s Dbase. "I like the interface, but in the future, I'm not sure it won't come from Microsoft as a part of Windows or Presentation Manager."

Levi Strauss & Co. in San Francisco has done some evaluation of New Wave. The feelings about it were positive, but the company is biding its time, a spokeswoman said. "There has not been an adequate opportunity to see enough people up and running on it," she said.

Even HP's vendor alliances may be tenuous. When Microsoft has Windows 4.0, NCR will re-evaluate New Wave. "If Microsoft turns out better, we'll go with it," said Darrell Clark, senior vice president of NCR's Integrated Systems Group.

To take advantage of New Wave's automatic updates and tasking capabilities, applications must be ported to New Wave. Nonported applications will work only in building compound documents that include parts from two or more applications. The company claims that more than 100 applications have been ported to New Wave.

In Windows 4.0, applications that run on Windows would be able to use Microsoft's New Wave-like capabilities without porting the software, according to a Microsoft spokesman.

Hewlett-Packard's New Wave: *Microsoft's plan for Windows may hold users back*

Given that HP is a potential rival as well as a partner to Microsoft — the firms are co-defendants in Apple Computer, Inc.'s pending lawsuit over alleged copyright violations in Windows Version 2.01 — Microsoft has mixed feelings about the relationship, according to Rich Abel, group product manager for Microsoft Windows.

"We're pleased that HP has built extensions on top of Windows, but our approaches are different. Our focus is to implement it at the operating system level," Abel said.

More to offer

Jim McDonnell, HP's marketing manager for New Wave, claimed that New Wave already includes more functions than what is being talked about for Windows 4.0, and two more releases are planned by the end of the year.

"One function will have automatic updates of data across the network as well as within one user's PC," he said. "The second will improve the automatic tasking capability to interact with users — perhaps using limited voice."

One rallying point for New Wave may be HP's embrace of open systems and its plans to apply New Wave technology to the Unix and OS/2 operating systems before Windows 4.0 gets out the door. Microsoft consistently derides any potential business role for Unix.

NCR adopted New Wave to speed time to market for one segment of Cooperation: NCR's 54-module implementation of its new client/server, open systems architecture. "No one can develop everything they need to have; you never have enough resources," Clark said.

Along with NCR, AT&T, Canon, Inc., and Data General Corp. have licensed the New Wave application.

AT&T's Computer Systems Division is licensing New Wave as part of its Rhapsody system client software. AT&T threw its weight behind New Wave to push for an object-oriented standard to "drive independent software vendors" to write to it, according to Marni Ehrlich, a Rhapsody product manager.

Count the New Waves

In the San Francisco Bay Area, there is a family whose 13 sons all bear the same name: Frank Manibusen. New Wave is the Frank Manibusen of HP.

New Wave can denote many different pieces of software at many levels, and it seems that only insiders in the HP family know which is which. At least the Frank Manibusens keep track by calling each other by their middle names. HP officials said they are not interested in making the monikers any more comprehensible.

Most HP users have heard of New Wave, but their scope of knowledge appears to be limited to New Wave, the application. Dennis Brown, programming supervisor at the *Wichita Eagle & Beacon* newspaper, said he has only seen the New Wave personal computer application in passing. "I haven't been hit with a lot of marketing information from HP," he added. Other software also bearing the name New Wave escapes him, he said.

In addition to the discrete New Wave application, the New Wave Computing concept encompasses a host of applications in commercial, industrial and engineering environments as well as segments of the company's Unix operating system:

- New Wave Office is an expanding set of functions (there are currently 21) that includes electronic mail, graphics and document editing.
- Team Computing is similar to New Wave Office but is tailored to an engineering environment.
- Concurrent Manufacturing, also similar to New Wave Office, is tailored to the computer integrated manufacturing environment.

HP is primarily licensing these applications directly to corporate users such as American Airlines. NCR Corp. has discussed licensing parts of New Wave to include in its own software packages but has yet to commit to any, according to Darrell Clark, senior vice president of NCR's Integrated Systems Group.

Arching over the applications is the New Wave Computing strategy, an overall name for all of the above plus application program interfaces and object definitions to integrate applications and parts of the Open Software Foundation (OSF) operating system standards such as Distributed Computing Environment, Motif and network management.

HP is actively trying to get the operating system software accepted as the OSF's Unix standard so HP can license the layers to other vendors.

If HP is successful with its wholesale licensing scheme (see story page 1), as well as marketing to end users, consumers could benefit in the long term with lowered overall software pricing, according to Wim Roelandts, vice president and general manager at HP's Networked Systems Group.

J.A. SAVAGE

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TRENDS

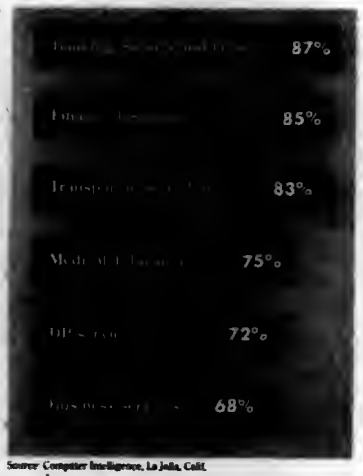
Mainframe Security Software

The presence of security software is on the rise at IBM/plug-compatible mainframe sites, as access control to important data continues to be a critical concern

Penetration by industry

Percent of U.S. MVS sites with security software
(Base: 3,686)

Levels of security software use are highest within industries with the most cash at stake. Banking, finance and insurance come in on top with over 80% of their MVS sites having mainframe security software

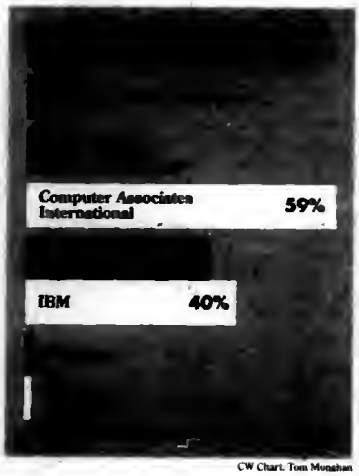


Source: Computer Intelligence, La Jolla, Calif.

Market share at MVS sites

Percent of U.S. MVS sites with security software
(Base: 3,686)

During the last five years, Computer Associates International, Inc. has acquired IBM's three principal competitors in the mainframe security software arena, ensuring its lead in total market share



CW Chart: Tom Monahan

NEXT WEEK

The art of "friendly persuasion" has brought sports and entertainment agent **Bob Woolf** success in representing the likes of basketball superstar Larry Bird and singers New Kids On The Block. Woolf explains why you let the other guy go first, why splitting the difference is a bad idea and other negotiating tips in Executive Report.

The best way to clog up the workings of the information systems department is to postpone small application projects and fixes. Before you know it, all those little "unimportant" user requests have turned into a whopping backlog. In Depth will show you how a "quick response" evaluation process can be the key to a productive IS staff and happy users.

INSIDE LINES

Not so fast!

Lawyers for the Kemper Lesnick Organization, a Software Publishers Association target that settled for $75,000 in December 1990, are saying the party responsible for illegally copying software has left the firm. But court documents claim that Kemper Lesnick's then-and-still chief financial officer, Martin Friedman, was clearly aware of the practice and even told employees he would survey other firms to prove that it was "like speeding . . . everyone does it." Friedman's logic may be questionable: Before the raid, he received a memo from his IS manager, who has since left the firm, reporting that at most, it would cost $30,000 to replace the illegal software with the right stuff.

Driving to the top

Fujitsu is expected to announce a 5¼-in. hard disk drive with a 2G-byte unformatted capacity this week. This surpasses the current 1.5G- and 1.7G-byte capacity leaders from Seagate Technology and Micropolis, according to analysts.

Sliding down the slopes

US West has reportedly been waiting for months to receive its order of some 500 Compaq LTE 386S/20 notebook PCs, now promised for the end of this month. The firm's Denver-area suppliers told it that faulty LTE hard drives are causing the delays. US West did get its hands on at least one LTE, which suffered from frozen-drive syndrome. A Compaq spokeswoman acknowledged fulfillment delays but said she knew of no drive troubles.

Now we've got SNA Lite?

When is SNA not SNA? When it has been stripped down and fitted with all kinds of high-octane gear to manage "non-Systems Network Architecture (SNA)-specific" transmissions over a fast-packet network. Such is the case with one of IBM's lesser publicized projects to fit itself for the upcoming era of 1G bit/sec. peer-to-peer networks, according to IBM networking honcho Rick McGee. "In order to exploit high-speed environments like Sonet and fiber, SNA will have to undergo some changes — just like Transmission Control Protocol/Internet Protocol and Open Systems Interconnect will," McGee said. He added that this leaner, meaner SNA will definitely lose link-by-link acknowledgment and recovery mechanisms that currently slow it down.

Apple, take noteski!

The scheduled highlight of the Russian delegation's trip to the Silicon Valley last month was supposed to be a tour of the Apple factory, where the Russians were going to have a go at snapping together a Macintosh in under one minute. But what the comrades really raved about was their trip to The Price Club, a West Coast discount warehouse.

Not ready for Broadway

Claris may have taken over responsibility for Hypercard 2.0, but users are already grumbling about the way the firm is handling its new reaponsibilities. Some users report that the Hypercard installer script — a vital component for updating to the newer version — is missing from some early 2.0 releases. Additionally, the Hypercard technical support line is not only overcrowded, but it's a toll call to boot.

What's in a Word?

Microsoft engineers are putting together what they call a "workstation-based" office setup that will integrate its Word for Windows application into a work environment, which will include such business-oriented technologies as a facsimile and scanner. It's due this spring.

There are in fact two 'ls' in the name of Tony Mondello, IBM vice president of office systems development. We only had one in our item here last week. We're in need of a software application into which we can enter info from business cards and then use it to spell check our words. Oh well, we pay News Editor Pete Bartolik to take it on the chin, so when you spot a goof, call him at (800) 343-6474 or fax the red-lined embarrassment to (508) 875-8931. He's also on Compuserve, 76537,2413; Prodigy, MHTS78A; and MCI Mail, 281-6320.

AT&T introduces the biggest thing to hit contact lens sales since shag carpeting.

AT&T Integrated Services Digital Network (ISDN) gave Bausch & Lomb the capability to take 1,000 more orders per week.

Ask most people what AT&T ISDN has to do with the contact lens business and they'll probably tell you it's the first line on the eye chart. But if you ask the people at Bausch & Lomb, they'll tell you about a digital technology so innovative, it lets them answer a lot more calls using the same number of live operators they had before.

Not too long ago, Bausch & Lomb's customer service center was getting a lot more calls than they could handle. Realizing that lost calls can turn into lost customers, they called AT&T for help.

Through AT&T ISDN, Bausch & Lomb got a feature called Automatic Number Identification (ANI). With ANI, their computers can automatically capture each caller's phone number and match it to the customer's record. The end result? Call handling time has been cut by an average of four seconds per call. Which means Bausch & Lomb's customer service representatives can now handle about 1,000 more weekly calls than they could before.

So if you've been looking for a way to boost sales without taking on more overhead, call off the search. AT&T's contact lens solution could be the answer for your business, too.

Innovation. Another AT&T advantage.

For more information about AT&T ISDN, call your AT&T Account Executive or 1 800 247-1212, Ext. 144.

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